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FRANCISCO J. MIGOYA
THE CULINARY INSTITUTE OF AMERICA

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JOHN WILEY & SONS, INC.

Photography © 2008 Ben Fink
Design by Vertigo Design, NYC

This book is printed on acid-free paper. ♾

Published by John Wiley & Sons, Inc., Hoboken, New Jersey
Published simultaneously in Canada

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LIBRARY OF CONGRESS CATALOGING-IN-PUBLICATION DATA:

Migoya, Francisco.
Frozen desserts / Francisco Migoya.
p. cm.
Includes bibliographical references and index.
ISBN 978-0-470-11866-5 (cloth)
1. Ice cream, ices, etc. 2. Frozen desserts. I. Title.
TX795.M62 2008
641.8'62—dc22
2007035515

PRINTED IN CHINA

10 9 8 7 6 5 4 3 2 1

Contents

Acknowledgments

There are many people whom I would like to thank for making this book possible. In no particular order, I would like to thank those who assisted with the production and testing of every single recipe in this book, including Justin Kurtz and especially Lauren Genco and Noah Carroll, some of the best people I have worked with. Thank you for all your hard work, not only on this book, but in everything else you do.

I want to thank Maggie Wheeler for her invaluable input, attention to detail, and infinite patience with my constant rewrites and endless questioning, and Patrick Decker, for being instrumental in the photographic production and spending long hours in a very small studio without missing a beat. I would also like to thank Kate McBride for her guidance in making this book the best that it could be.

This book's photographs are by Ben Fink, who understands the importance of speed when photographing anything frozen. Thank you, Ben, for making this book beautiful.

I also thank all of those chefs and pastry chefs I have worked for in the past. Donna Meadows, my first pastry chef, taught me how to work fast and trusted me to temper chocolate. Joseba Encabo, professor at The Culinary Institute of America, taught me the importance of mise en place. Rick Lakkonnen, an excellent chef whom I worked for at the River Café, took a chance on me. Patrick Coston is one of the most driven and talented pastry chefs I have ever met; I am eternally grateful for everything he taught me and for getting me my first pastry chef job. Speaking of my first pastry chef job, I thank Scott Bryan, who gave me that first pastry job after a twenty-minute interview. And thanks to Thomas Keller, who taught me the importance of finesse and that there is life after the French Laundry.

I also thank The Culinary Institute of America for making this project possible, especially Tom Vaccaro, Associate Dean for Curriculum and Instruction of Baking and Pastry Arts, and Dr. Tim Ryan, C.M.C., A.A.C., President.

And last, but not least, I thank my wife, Kris, for putting up with many late nights and weekends spent working, my parents for investing wisely in my education, and my daughter, Isabel.

Introduction

During my years as a pastry cook and eventually a pastry chef, I have focused mainly on plated desserts, many of which have a frozen component included in one way or another, either as the main item or as part of the whole. Frozen desserts play an important role in any highly regarded establishment because they represent a significant percentage of the actual food that the pastry kitchen puts out for paying customers. Knowing how to produce the highest-quality product is crucial to any aspiring or established pastry chef. Many things can go wrong, but having an intimate understanding of the entire production process will result in a flawless product. Competition these days is fierce. There are many pastry chefs who understand the importance of every single item on their menu, and these are the pastry chefs who are successful. They are the ones who realize that every day there are more and more sophisticated diners with very high expectations and a low threshold for incompetence. "Good" is just not good enough.

I must admit that at the very beginning of my career I appropriated other pastry chefs' ideas and recipes left and right. I figured that if someone published a book, we were all entitled to take from it as we pleased. If you write a book, it is to share with others what you know, plain and simple, but there is only so much of that you can do without thinking about what kind of a pastry chef you are. Are you a taker or an innovator? Do you create or emulate? I think all pastry chefs are a combination of all of the above; they decide to present their own personal take on things out of respect to the author, but mostly out of self-respect. I know this because there is nothing new under the sun. There are innovations, without a doubt, but all of the available ingredients and flavors have been used before. I am not going to reinvent ice cream, but I can figure out a way to make it better, and I can choose what flavors to make and how I will garnish them.

The intention of this book is to give the reader all of the information that he or she needs to produce high-quality frozen desserts for restaurant or hotel production. This information is geared toward small-batch production, not commercial production. That is a whole other story. Small-batch-production frozen desserts are meant to be consumed the day they are churned or frozen, not to sit in a freezer for a long period of time. The difference in quality is significant. Commercially produced items are loaded with chemicals, and while some of the finished ice creams and sorbets are decent, they will never match up to the smooth texture, mouth feel, and intensity of flavor that comes from making smaller batches.

The information provided in this book is not limited to recipes. It isn't enough to just give a recipe. There has to be a complete immersion in the entire frozen dessert production process. Always remember that if anything can go wrong, it will. Prevention is the best solution to any problem that may arise further down the line. This means that by controlling every aspect of production, you diminish the chances for mistakes. Throughout these pages I have included practical advice for real-life situations that will get you to the point where very little is out of your control.

It is important to have an intimate knowledge of all the different ingredients that are used in frozen desserts, because you have to understand how to use them appropriately. Otherwise there is a good chance that the product will fail to meet your standards, or, even worse, your customers' standards. In the chapter on ingredients (see page 9), not only is each one described in detail, but how they interact with each other is explained as well. This will help you understand what has happened if something goes wrong with your recipe. Why is this sorbet rubbery? Why is this ice cream icy? The most common ingredients used in frozen desserts are milk, heavy cream, eggs, granulated sugar, and fruit purées, but there are others that can improve the final texture and mouth feel of an ice cream or sorbet. Stabilizers, emulsifiers, dextrose, atomized glucose, invert sugar, and powdered milk are a few examples of key ingredients used in modern production that are covered in that chapter.

Tools and equipment also play an important role in the process of making frozen desserts. I have written about the two types of ice cream machines that are the most widely used for small-batch production. There are a variety of brands available, but these two types are representative of what is used in the industry. The pros and cons of each one of them are outlined in the equipment chapter (see page 31). This information is meant to help you make an informed decision about the investment you are going to make. Small tools used in producing frozen desserts, like the refractometer, are also explained in detail. Technology has made production much faster, but sometimes it can be difficult to understand the ins and outs of complicated tools. This knowledge will be useful in order to get the most and best out of a machine, tool, or other piece of equipment.

There are many different types of frozen desserts, but only the most widely used varieties made it into this book. Ice cream, gelato, sherbet, sorbet, granité, ices, and aerated still-frozen desserts such as semifreddo, parfait, bombe, frozen soufflé, and frozen mousse are the categories of desserts that this book covers. The heart of the book explains the definition of each of these desserts as well as their differences, how they are made, and how they should be stored during service. Ice creams and sorbets can be made with any given recipe, but there are formulas and new techniques that have improved these products in the past ten years. Traditional methods of production are not obsolete, but newer methods provide another option for pastry chefs. These techniques, both classic and modern, the formulas, and the current trends will be covered over the course of several chapters.

As for the finished products, I have broken them down into four categories: pre-desserts, plated desserts, entremets, and savory items. Each section features a variety of recipes that includes all the types of frozen desserts covered in this book. Flavors range from the traditional, like plain vanilla ice cream and raspberry sorbet, to the more unusual, like verjus sorbet, balsamic vinegar ice cream, and white chocolate ice cream with caviar. These items are garnished with different components to enhance their flavor and provide a different texture. Many mistakes were made to obtain these finished products, but that is part of the beauty of working with food. You never stop learning. You never stop making mistakes, either. With any luck, this book will keep aspiring pastry chefs and working pastry chefs from making all the mistakes I had to learn from, and perhaps it will help them thrive in their careers sooner rather than later. I hope you find this book useful.

chapter one A Brief History of Frozen Desserts

IN TODAY'S MODERN PASTRY KITCHEN, you will probably see, among many machines, a batch freezer or freezers filled with a variety of freshly made ice cream, gelato, sorbet, and other frozen treats, and perhaps you will think nothing of it. Why should you? Your customers expect to get a scoop or two and then be on their way. But there are almost three thousand years of history behind that scoop of ice cream. It started when someone had the bright idea to eat flavored snow, and it has progressed all the way to the present time, when a machine as technologically advanced as the Pacojet is commonplace in today's kitchens.

UNFORTUNATELY, THERE IS NO SOLID OR VERIFIABLE EVIDENCE AS TO WHEN OR WHERE MAN BEGAN TO EMPLOY ICE OR FREEZING TEMPERATURES OR MACHINES TO PRODUCE FROZEN DESSERTS. IT IS GENERALLY ACCEPTED AS FOLKLORE, AND THEREFORE NOT BEYOND DISPUTE, THAT THE CHINESE WERE THE FIRST TO HAVE PRODUCED A RUDIMENTARY ICE CREAM (OR WAS IT FLAVORED SNOW...OR SORBET?) AROUND 3000 B.C.E. MARCO POLO IS CREDITED WITH BRINGING THIS DISCOVERY TO ITALY IN THE THIRTEENTH CENTURY. AND THEN IT IS SAID THAT THE VERY YOUNG QUEEN CATHERINE DE MEDICI, ALONG WITH HER ITALIAN CHEFS, INITIATED THE FRENCH IN THE PLEASURES OF SORBET, ICES, AND ICE CREAM IN THE SIXTEENTH CENTURY. IT MAY BE TRUE, BUT IT IS CERTAINLY NOT VERIFIABLE. WHY DID THESE TRANSPLANTED ITALIAN CHEFS' INFLUENCE AND TECHNIQUES THRIVE IN FRANCE? WAS IT THE NOVELTY OF THEIR FOOD? THE EXCELLENCE OF THE CHEFS' PREPARATIONS? OR PERHAPS THERE IS SOME ROOM FOR FOLKLORE THAT FILLS A VOID OF CONCRETE FACTS. IT IS MY PERSONAL OPINION THAT THE VERY FIRST FROZEN DESSERT HAD TO BE FLAVORED SNOW. I DON'T BELIEVE IT WAS DISCOVERED BY A SINGLE GROUP OF PEOPLE. I THINK IT MAY HAVE BEEN LIKE HARNESSING FIRE OR THE INVENTION OF THE WHEEL: IT WAS MERELY ACCIDENTAL AND OCCURRED IN MANY DISCONNECTED CULTURES.

The following is a timeline of the deciding (and some merely anecdotal) moments in the history of frozen desserts. Most of the verifiable information is related to their development in the United States.

- **3000 B.C.E. (APPROXIMATELY):** The Chinese are credited with making the first frozen dessert, a flavored ice (whether it was snow with fruit juice or milk and sugar churned in a rudimentary machine that employed ice and salt to freeze it is unknown). It is believed by some that this knowledge was taught to Arab traders, who in turn spread it throughout Europe. However, this would contradict the generally accepted theory that Marco Polo was responsible for taking this discovery to Europe in the thirteenth century.
- **2500 B.C.E. (APPROXIMATELY):** Egyptian hieroglyphs depict a vessel filled with snow next to another filled with fruit juice.
- **FIRST CENTURY A.D. (64 AND 54 A.D. APPROXIMATELY):** The Roman emperor Nero is credited with "inventing" flavored ices. He had runners bring him mountain snow from the Apennines through the Appian Way, running almost 400 kilometers to bring him fresh snow, which would be mixed with honey and wine.
- **FOURTH CENTURY A.D.:** The "endothermic effect," in which salt lowers the freezing point of ice and, when mixed, the two turn into a very cold slush that is below freezing temperature and that can freeze another liquid through conduction, is mentioned in the "Pancatantra." This Indian poem mentions in a verse that water can become very cold only if it contains salt.
- **1250 A.D. (APPROXIMATELY):** An Arab historian, Ibn Abu Usaybi'a, writes the first known technical description for making ice, but he in turn attributes this knowledge to Ibn Bakhtawayhi, of whom nothing is known.
- **LATE THIRTEENTH CENTURY:** Supposedly, Marco Polo brings his discovery to Italy from China, but this is unverifiable. Some historians go as far as saying that Marco Polo didn't even make it to China at all, but that's a different story.
- **1533:** Catherine de Medici arrives in France to marry the Duke of Orléans, who would become Henry II of France. She brings her cadre of Italian chefs, who introduce the frozen delicacies of sorbets and ice creams to French nobility during their month-long wedding celebration, where legend has it they served a different flavor every day.
- **1585:** The word *sorbet* is first recorded in English, derived from French (*sorbet*) and then Italian (*sorbetto*), which is itself derived from the Turkish word *sherbet*.

- **1603:** The word *sherbet* is first recorded in the English language. It's derived from the Ottoman Turkish word *sherbet* or Persian *sharbat,* both going back to the Arabic word *sarba,* which means "drink." The Persian and Turkish words referred to a sweet diluted fruit juice, which was sometimes cooled with snow. In Europe, sherbet was known to be a carbonated drink. It wasn't until 1891 that the word *sherbet* was applied to a frozen dessert.
- **1660s:** Water ices begin appearing in Sicily, Naples, Florence, Paris, and Spain.
- **1672:** The English term *ice cream* appears in a document from the court of Charles II in England.
- **1674:** The first recorded recipe for sorbet appears in Paris.
- **1682:** The first recipe for ice cream (named "Snow of Orange Flowers") is recorded in a book titled *Nouveau Confiturier* (The New Confectioner).
- **1686:** The Procope, the oldest restaurant in Paris and the first café, opens its doors, serving, among other items, flavored ices. The owner was Francesco Procopio Dei Coltelli. This café exists to this day, offering a mind-boggling variety of French and Italian food.
- **1700:** *L'Art de Faire des Glaces* (The Art of Making Ices), an anonymous manuscript, is published in France, containing recipes for custard-based ice creams.
- **1744:** The first written evidence of ice cream in America appears when a guest of William Bladen, the proprietary governor of Maryland, writes a letter in which he describes an ice cream that was made of milk and strawberries.
- **1747:** *The Art of Cookery Made Easy,* by Hannah Glass, is published in London. It contains a recipe and detailed instructions for making ice cream.
- **1768:** A similar book with a similar title (*The Art of Making Frozen Desserts*) is published in Paris, in which the act of freezing water is explained through divine intervention.
- **1773:** Phillip Lenzi, a caterer, advertises in a New York newspaper (*The Rivington New York Gazetteer*) that he has just arrived from London and will be selling a variety of confections, including ice cream.
- **1776:** The first ice cream parlor in the United States opens in New York City.
- **1802:** Baked Alaska supposedly makes its first appearance when Thomas Jefferson serves minister Manasseh Cuttler a dessert that he describes as "ice cream very good, crust wholly dried, crumbled into thin flakes." Another story is that in 1866, a master cook for the Chinese mission in Paris produced a dessert in which he baked a dough similar to sablée dough (which is typically used for tarts) over ice cream for the French chef Balzac of the Grand Hotel. Baked Alaska is also attributed to Charles Ranhofer, the chef at Delmonico's in New York City in 1869, who created this dessert to commemorate the purchase of Alaska by the United States, but he called it "Alaska, Florida," not Baked Alaska. The final version of Baked Alaska as we know it today is attributed to Benjamin Thompson of Massachusetts, who experimented with the resistance to heat of egg whites that, when baked, resulted

in a brown topping that eventually became the crown for what came to be called “Baked Alaska.” The name first appeared in print in 1905, and was used in the 1909 edition of the Fannie Farmer cookbook. In France it is known as *Omelette Norvegienne*.

- **1813:** Ice cream is served at President James Madison’s inaugural ball.
- **1843:** Nancy Johnson, a Philadelphia woman, invents the hand-cranked ice cream freezer, by which the “endothermic effect” makes freezing ice cream possible. A bucket for the ice and salt holds another sealed container fitted with a blade and a handle. The ice cream base is placed in the sealed container and the ice cream is churned by spinning the blade. This type of machine still exists, and she was smart enough to patent it.
- **1851:** Commercial production of ice cream begins in the United States in Maryland, thanks to Jacob Fussell.
- **1869:** The first recipe for coffee-flavored parfait is recorded in France.
- **1878:** Mechanical refrigeration is perfected by Ferdinand Carré.
- **1879:** The ice cream soda is introduced.
- **1896:** Italo Marchiony begins selling ice cream in a container from his pushcart in New York City. He is credited with inventing the ice cream cone, which he patented in 1903. Unverifiable sources claim that the ice cream cone had already first made its appearance in Paris in 1807.
- **1899:** August Gaulin, a Parisian, invents the homogenizer, the mechanics of which essentially haven’t changed since its invention.
- **1904:** The banana split is created in Latrobe, Pennsylvania, by David Strickler.
- **1905:** Ice cream production in the United States hits five million gallons.
- **1906:** The first dairy show is held in Chicago. Chicago adopts the first regulations with regard to pasteurization.
- **1913:** The direct expansion freezer is invented (freezers as we know them today).
- **1920s:** Many novelty products are invented, such as the Eskimo Pie, Good Humor bars, and the Popsicle. This last one is attributed to Frank Epperson, who created it in 1923 with the original flavor being lemon. It was originally named the Epsicle. He patented his “invention” in 1924.
- **1926 (APPROXIMATELY):** H. H. Miller invents the first horizontal batch freezer. The first commercial continuous process freezer, which made it possible to mass-produce ice cream, was perfected by Clarence Vogt. This type of machine is the predecessor of present-day industrial ice cream machines. Both of these inventions are crucial to modern-day frozen dessert production, with regard to churning and reserving frozen desserts.
- **1990s:** The Pacojet is invented. As far as ice cream and sorbet manufacture goes, this was the most notable advancement since 1926, revolutionizing the traditional churning process until . . .

- **2004:** Philip Preston invents the anti-griddle (see sidebar on page 40 in chapter 3 for a detailed description of how it works).

The Big Leagues (when the big guys got started):

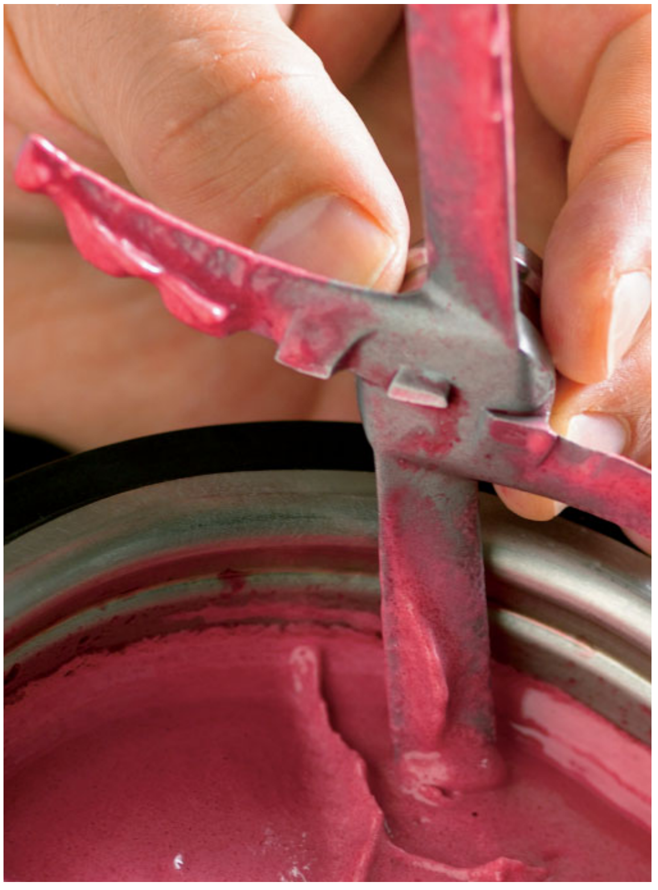
- **1940:** Dairy Queen
- **1945:** Baskin-Robbins
- **1947:** Borden
- **1961:** Häagen-Dazs (purchased by Pillsbury in 1983)
- **1978:** Ben & Jerry's

Regardless of whether we like or dislike these brands, they are largely responsible for making ice cream and other frozen desserts popular and accessible to millions of people. This, in a way, is good for artisan manufacturers as well, because they can cater to a more specific niche that will pay a higher price for a more specialized product.

Then and Now

It is important to remind ourselves of how good we have it now. Think of having to hand-crank six flavors of ice cream before lunch service, or making sure that there was enough ice in the "cooler" to keep the ingredients from spoiling too quickly. Even the simplest tools such as a whisk, a ladle, a bowl, or any stainless steel surface weren't available as we know them now until a few decades ago. Have we become spoiled or have we become more efficient? In order to understand where the modern pastry kitchen is now, it is important to appreciate everything that has had to come together through many centuries of trial and error in order for us to make that one special dessert.

As far as ingredients go, they are essentially the same as they have been for centuries: milk, heavy cream, eggs, and sugar for ice cream, and water, fruit juice or purée, and sugar for sorbets. If anything, ingredients today are better understood, and the way they interact with each other to produce a high-quality product has become a science in itself. Arguably one of the most significant steps forward is that industrial manufacturers and pastry chefs have the option to add stabilizers and emulsifiers (see page 18 and page 22) to prolong the shelf life and control the texture of their frozen desserts. This in turn has changed the traditional methods and techniques used to make ice cream and sorbet bases (see Methods, page 59), without making their predecessors disappear completely. Ice cream and sorbet recipes can now be calculated through formulas (see Formulas, page 61 and 77). A refractometer (one of many modern equipment inventions that help in the pastry kitchen) can help us determine the precise sugar content in a sorbet or granité base and make the necessary adjustments to produce a high-quality product.



What would Marie-Antoine Carême or Auguste Escoffier have thought of Ferran Adrià's experimental laboratory? The foams, caviars, and "chemicals" used to manipulate food? In a way, Carême could easily be compared to Adrià. In his time he was producing groundbreaking preparations with exuberant presentations and a good dose of shock value. It was embraced and admired then, just as Adriàs has become legendary in our day. It is exciting to imagine the state of food and technology in five, ten, or fifteen years. Both these factors evolve much faster nowadays than they did two hundred years ago, because now there are more people involved in food, there is a constant need for progress and making our lives better and—why not—more entertaining. What will be the next *espuma* or the next Pacojet? As long as there are chefs who continue to research and experiment, there will be endless possibilities. Will there be new varieties of frozen desserts? New production techniques? New ingredients that improve the texture and shelf life of ice cream? Yes, yes, and yes.

The Past in the Present

Batch freezers and Pacojets, incredible machines that produce the highest-quality frozen desserts in a matter of minutes and will fit in any corner of a very cramped kitchen, or a blast freezer that can drop its temperature down to −38°C/−36°F in less than five minutes, are nothing short of a miracle. Technology can be very similar to magic, unless you know how it works. Even though I understand how the basic mechanisms of most of the machines in my shop work, I can't for the life of me explain how in the world a compressor and Freon gas can possibly turn a liquid into ice. In the end I am just a pastry chef who wants to make the best possible product.

Understanding the past is a humbling experience. Having said that, fully embracing technology, information, and new equipment can make you better, faster, and more efficient and can help you produce a higher-quality product. This is an industry in which it doesn't make much sense to hold on to the past, no matter how nostalgic you might be about Grandma's hand-cranked vanilla ice cream. In the industry, it will not be nearly as good as what a Pacojet is capable of doing with the same vanilla ice cream base in a fraction of the time. Speed and efficiency are two determining factors in the success or failure of your establishment.

Hygiene and Sanitation in the Contemporary Kitchen

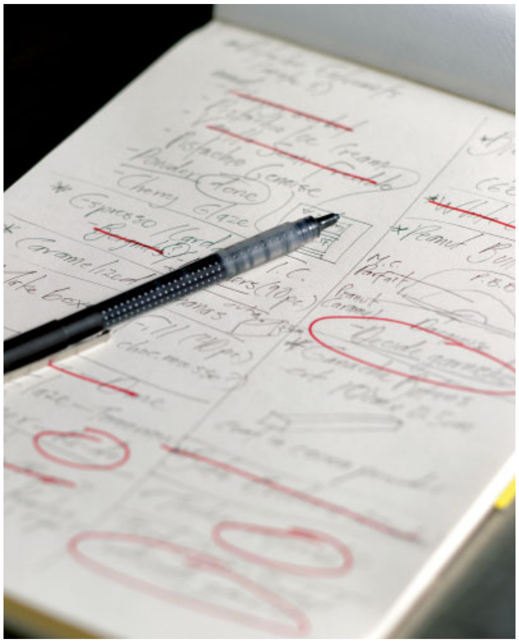
Raw ingredients are more economical now than they were twenty years ago, but not necessarily better. Potentially hazardous foods, such as dairy products, are much safer to consume now since we have the technology to keep most pathogens in check, but it is not unusual to hear about a salmonella or *E. coli* outbreak more often than we would like. Just because there is now an abundance of food, it doesn't mean that it is better.

Prevention is key when it comes to working in a sanitary environment. We now understand how food can become contaminated, and we also have the knowledge to prevent such contamination. There are many programs that educate food handlers on food safety, and many establishments make it obligatory for their employees to get certified by these companies. The real principle behind being informed is to put this knowledge into practice every day. Sanitation is not optional, and having the knowledge and the tools to practice food safety should be every pastry chef's obligation. Ignoring or temporarily dismissing these practices for convenience is grossly irresponsible. The awareness of sanitation needs to be second nature to everyone who handles food.

One of the most important duties for those of us who are responsible for processing and selling food is to make sure we know where our ingredients come from and how to handle them responsibly. The information is available if you look for it. That in itself is another part of the evolution of food; we now have the tools to obtain any kind of information about our ingredients in a matter of seconds with the Internet.

The Role of Frozen Desserts

Rarely will you see a dessert menu without some kind of frozen dessert on it, and this applies to even the smallest diners, in remote locations. The reason for this is quite simple: people love frozen desserts, mainly ice cream. Frozen desserts are an integral part of any dessert menu because they satisfy on many levels: they are refreshing after a heavy meal, they are cold (obviously), sweet, smooth, and, in some varieties, rich and creamy. They also hit a familiar and nostalgic note, because for many of us ice cream is an important part of our lives, having enjoyed it since childhood. Good times are usually connected to ice cream somehow, and the brain recognizes that.



Now, this doesn't mean that you can't have a dessert menu without frozen desserts, or individual desserts without a frozen component. In fact, it is better if pastry chefs do not saturate their menus with ice cream or sorbets (or any other frozen dessert, for that matter), because as much as they are an integral part of the pastry kitchen, it takes a skilled professional to spread out beyond the frozen. Simply put, some pastry chefs like preparing frozen items for the wrong reasons. They are relatively easy to store and prepare in advance, and they just have to be plunked down on the plate and served with some berries and sauce. Next!

It is interesting to see that more and more savory frozen items are showing up in restaurants. Just because it's frozen, it doesn't mean that it has to be sweet (or too sweet, anyway). What began as a trend in the mid- to late 1990s is sure to become a steady fixture in contemporary gastronomy.

chapter two Ingredients

MANY OF US HAVE GOTTEN USED TO USING SOMEONE ELSE'S RECIPES to make our frozen desserts, and perhaps we've made a few adaptations of our own to suit our personal preferences. There is nothing inherently wrong with that. But why not come up with our own formulas? This might seem like a tremendous task, but it can also mean that your favorite recipe can be reformulated to be even better tasting, to have a better mouth feel, and to withstand freezing temperatures for many hours without reducing its quality. Once the nature of commonly used ingredients is understood, the recipe formulation process becomes less complicated. Making something better is always worth any amount of extra work.

While it is not necessary for a pastry chef to have a degree in chemistry, it is important to understand the way ingredients work, how and/or when they are to be added to a recipe, as well as how they interact with other ingredients. Some ingredients can be very fickle and easily ruin the final product if they aren't used in the manner for which they are intended.

Once this understanding of their relationship is established, the margin for error is minimal, and the results will be consistent and will yield a high-quality product. The ingredients covered in this chapter are those that are most frequently used and are readily available to most culinary professionals. Those that aren't available for practical reasons are not included here. For example, if there is a very specific fruit that grows only in a certain area of the country (or the world), chances are that most pastry chefs will not be able to obtain it and use it in their kitchens. There are perhaps hundreds of fruits that most of us will never encounter, let alone be able to purchase (or harvest) and turn into a sorbet. Because of this, it is best to focus on what is easily obtainable.

Dairy Products

The first rule when it comes to the ingredients you will use to manufacture your frozen desserts is to always use the highest quality possible. With some ingredients, such as dairy, it is more important to keep an eye on quality than with others, like granulated sugar, the quality of which is about the same everywhere. There are many different purveyors of dairy products. Some of the larger dairies will opt for mass-production techniques, which increase volume and sales but may result in products lacking in quality, flavor, richness, or mouth feel. Smaller farms generally produce superior dairy products because it is in their best interest to do so. Why? Because they can't necessarily compete with price, but they can compete with quality. However, you can expect consistency from mass-production farms, whereas the medium to small farm may not be able to guarantee consistency in something such as the fat content of their heavy cream. If the fat content is not always the same, your ice cream won't always come out the same. This is why it is important to establish a good relationship with your dairy provider(s) so you can receive a consistent product from them. Just because a product is certified organic and the farmer's family has produced dairy product for many generations doesn't necessarily mean that it will always be good.

MILK Unless otherwise specified, the milk and heavy cream called for in the recipes comes from cows. They are among the largest components for ice cream, sherbet, and gelato. Depending on the recipe, the milk can be whole, skim, or nonfat dry. Whole milk contains a certain amount of solids known as serum solids, which will be considered in the total amount of solids that compose an ice cream, sherbet, or gelato when formulating a recipe (see formulas, page 61). When the fat is removed from whole milk, it is called skim milk. The serum solids are still there, minus the fat. It is from the skimmed milk serum solids that nonfat milk solids are obtained. Nonfat dry milk is the most common source of nonfat milk solids, with less than 1 percent fat. It is composed of 50 percent lactose, which is the type of sugar found in milk (see more detailed information on sugars, page 15), 50 percent proteins (specifically, whey proteins and, to a lesser amount, casein), and minerals (calcium and phosphorus). Even though nonfat dry milk is dry in appearance, it is 4 percent water.

Nonfat dry milk's contribution to the final product includes mouth feel, body, and the ability to trap a larger amount of air. It helps form the structure of ice creams and sorbets (yes, sorbets, which can contain a small percentage of nonfat dry milk without being considered a sherbet, because the amount added is minimal and therefore has no impact on taste, just texture) without having to add more fat, and can improve the final products' quality. Some pastry chefs opt not to use it because of its distinctive

taste, which is similar to animal crackers. If used in excess, the finished product can have a salty aftertaste. Some recipes in this book will use nonfat dry milk as the choice for serum solids because it is easily obtainable and economical. From a nutritional standpoint, though, skim milk and nonfat dry milk are inferior to whole milk, because when the fat is removed, so are vitamins A and D, which are fat soluble and need fat to be absorbed by the body.

Milk fat is the lipids of milk and is composed primarily of triglycerides; in the case of whole milk, these account for 98 percent of the total milk fat (by weight). Other milk fats (as a percentage of the total milk fat) include diglycerides (.25 to .48 percent), monoglycerides (.02 to .04 percent), phospholipids (.6 to 1.0 percent), cholesterol, (.2 to .4 percent), glycolipids (.07 percent), and free fatty acids (.1 to .4 percent). Always keep in mind that these percentages depend on the breed of cow and the cow's diet (most milk comes from two breeds: Holstein and Jersey).

Whole milk contains only 3.6 percent fat by weight. These fats are minuscule globules suspended in a liquid. The milk proteins (whey proteins and caseins) found on the surface of each fat globule act as emulsifiers to maintain the fat evenly dispersed in the liquid. In order to produce an adequate ice cream, sherbet, or gelato structure, meaning one in which all the ingredients are evenly dispersed and all the fats are properly emulsified, the fat globule emulsion needs to be weakened so the globules can combine into bigger networks. They are weakened (or destabilized) during the freezing process. As the batch freezer machine beats the liquid base, the ice crystallizes and air is incorporated. These fat globule networks are connected but not completely combined; in other words, they are not fused. The more stable the emulsion, however, the better it will freeze, and this will result in a better finished product. The fat globule networks can be improved by adding different proteins such as egg yolks and mono- and diglycerides (fatty acids), as well as the sorbitan ester polysorbate 80, all of which act as emulsifiers.

HEAVY CREAM Heavy cream has a much higher percentage of fat than whole milk. The most common percentage is 40 percent (based on total weight); this will be the preferred percentage for the ice cream and gelato recipes in this book. Heavy cream is generally mixed with milk to reduce the fat content in an ice cream or gelato base, because using only heavy cream will produce a base that contains a very high fat content. This extra fat will quickly congeal while it is in the batch freezer machine (or Pacojet) and produce a grainy texture in the finished product. However, heavy cream is used in its entirety when it comes to aerated still-frozen desserts. It is one of the ingredients that is "aerated," meaning that air is incorporated into it through whipping, and this is directly responsible for the desserts' light texture and smooth mouth feel. The other ingredient that is aerated, depending on the type of frozen dessert, will be the egg (yolk, whites, or both).

Heavy cream is composed of water and fat molecules that are protected by a membrane composed of phospholipids that are evenly dispersed in the water. Whipped cream is a foam composed of water and air and is stabilized by proteins (fat molecules). When the cream is whipped or churned, fat molecules collide against one another, causing their protective membranes to break. These "freed" fat molecules cling to one another, forming a thin film of coagulated molecules that trap minuscule air bubbles, with just enough reinforcement to prevent the foam from collapsing. Basically, as you whip, the fat globules trap the air bubbles and strengthen the foam.

Heavy cream needs to be very cold (ideally 4°C / 39°F) to whip properly, otherwise the structure will not hold. When the cream is warmer, the fat globules get soft and are not capable of trapping air. Heavy cream that is 30 percent fat is ideal for whipping because the ratio of fat to water produces the most delicate texture, but 35 to 36 percent and 40 percent can be used with good results; the whipped cream will just be a little denser because of the higher fat content.

BUTTER Butter is a water-in-oil emulsion made from cream (cream is an oil-in-water emulsion, so it could be said that butter is the inside-out version of heavy cream). It must contain at least 80 percent, but not more than 90 percent, milk fat (also called butterfat), no more than 2 percent dry nonfat milk solids, and no more than 16 percent water. “Premium” butter contains 82 percent milk fat, which makes it an arguably better product because the more fat, the better flavor and mouth feel it will have. This might justify why it is more expensive as well. Other, less expensive butters may have 80 to 81 percent milk fat, and therefore cannot be labeled “premium” by law. The difference is so subtle that many people would be hard-pressed to tell the difference. The USDA allows butter manufacturers to round the butterfat percentage to the closest whole number, so if a butter contains 81.6 percent or up to 82.5 percent milk fat, on the label it will appear as 82 percent.

Knowing the fat percentage of all the ingredients is important when formulating a recipe for ice cream, because it can throw off the delicate balance of ingredients when there is too much or too little. Remember: all the ingredients work together, not separately. A fraction of a percentage won’t have a serious negative effect while making a gallon of ice cream, but it will if you decide to make fifty gallons. Here that is not our concern, since these recipes are formulated for small-batch production. Gelato and sherbet rarely, if ever, contain butter. Butter will be used sporadically in the recipes contained in this book, and it is mainly used for flavor purposes and not so much for its contribution to the chemistry of ice cream making.

It is rather easy to make butter. The process gets complicated when, as a farmer explained to me once, you have to “squeeze” the water out of the butter. Yes, some people still do it by hand, but the butter you find at the store is manufactured by machines known as cream separators, to ensure that most of that liquid is forced out and bacteria is kept at bay. While fresh farm butter has an outstanding taste and texture, it has a very short shelf life and spoils easily, so use it promptly after it is made. Also, if you have ever over-whipped heavy cream, you have essentially made butter. The liquid that separates from the fat is what we know as buttermilk, which is another ingredient that is used here for flavor purposes only.

EGGS An entire book, and a very large one at that, could be written about the egg and its properties, but for practical purposes the focus here will be on its applications in frozen desserts. Eggs typically come from chickens; eggs from other species are not used in this book. Although they have their place in cooking, they don’t necessarily make for a better frozen dessert. As an ingredient, eggs are without a doubt the most versatile of all of them. The following are the egg’s most notable uses:

- Binding liquids into a moist, tender solid
- Leavening through foaming for baked goods
- Thickening sauces and custards
- Coating or glazing
- Delaying crystallization in ice creams due to their fat content
- Emulsifying sauces and ice creams

Egg’s nutritional value is considerable, but the only components that are important to formulate ice cream and gelato recipes are the fat, solids, and water present in egg yolks. Egg whites are not typically used to make ice cream or gelato.

The quality of the eggs used in any recipe is significant. Average-quality eggs will give you an average-quality product. Certified organic eggs produced by truly free-range chickens will always be better than mass-produced eggs, where the hens have little or no space to roam and are fed low-quality chicken feed. (The USDA requires that “free-range” animals have access to outdoor areas, but there is no provision for how long they must spend or how much room they must have outside. The USDA’s regulations don’t require the birds to actually spend time outdoors, only to have access.) The flavor and appearance of an

egg is the direct result of the hen's diet and quality of life. Do not be misguided by the color of the yolk, though. It is thought that a deep orange yolk has better flavor than a bright yellow yolk, but the coloring depends on what the hen eats. For example, if she is fed yellow-orange plant pigments known as xanthophylls, they will be deposited in the yolk.

Egg yolks are used in certain ice creams and gelatos, while egg whites are not. The whole egg is used primarily in some varieties of still-frozen and aerated frozen desserts, such as frozen soufflés, parfaits, semifreddos, and some frozen mousses. For still-frozen and aerated frozen desserts, the yolks are generally separated from the whites, and they are seldom used together. The yolks are used to make the "bombe," or base, to which sugar and a flavor is added, and the whites are whipped with sugar to add volume and lightness and are then folded into the base to produce a light and delicate product. In this case, the egg whites should be pasteurized to avoid bacterial contamination such as salmonella. The yolks are usually warmed to a temperature above 63°C / 145°F, which will kill any bacteria and begin the coagulation process (i.e., the cooking of protein). Eggs cook at 63°C / 145°F, bacteria dies at 57°C / 135°F.

There is an Italian frozen dessert called *spuma* ("foam"), which consists of adding a cooked or uncooked meringue to a sorbet or sherbet base halfway through the freezing process to make a very airy and light frozen dessert. It should be noted that if the meringue is uncooked it must be made with pasteurized egg whites.

To determine the quality (or lack thereof) of an egg, observe the following characteristics:

- The shell should be hard and free of cracks and foreign matter. All hen eggs, regardless of color (white, brown, or even the beautiful pastel colors of the Araucana hen; see sidebar on page 15), have the same exact qualities; they differ only in size and, on some occasions, flavor.
- Egg yolks should be bright in color (from yellow to orange). Pale-colored yolks are a sign of an egg beyond its peak of freshness.
- Raw whites are opalescent. They aren't truly white until cooked. Cloudiness in raw whites indicates the presence of CO_2 that hasn't escaped from the shell and thus indicates a very fresh egg.
- Fresh egg whites tend to thin out as the egg ages because its protein changes in character. That's why fresh eggs sit up tall and firm (see photo) in the pan, while older ones spread out.
- The air cell, which is a pocket of air formed at the large end of the egg, is caused by contraction of the contents during cooling after laying. It increases in size as the egg ages.
- The chalazae are the twisted cord-like strands of egg white that anchor the yolk to the center of the egg. Prominent chalazae indicate freshness.

Egg quality is determined by grading (AA, A, and B, where AA is deemed better than A, and A is better than B), but it is not mandated by law. There isn't much you can tell from an egg on the outside. Most of its defining qualities are on the inside. The fresher the egg (or the more recently hatched), the better it tastes and the stronger its properties are. As the egg ages its proteins will weaken, and proteins are responsible for most of its useful properties. For example, older egg

whites won't be able to trap air bubbles as efficiently when whipped, because the protein is not as strong and capable of trapping air. Of course, if a shell is cracked, it is better not to use that egg.

When an egg is laid, it is coated on its way out by a cuticle produced by the hen, which protects the egg from bacterial infection. In the European Union and in many Latin American countries, this film is left intact, and therefore the egg can be stored at room temperature. In the United States, eggs are washed to clean off this cuticle and any other matter on the egg that might be considered a health hazard (like hen droppings), but this leaves the egg porous and even more prone to bacteria. The washed egg is coated in mineral oil that is intended to prolong the shelf life of the egg, but the egg must be kept refrigerated at or below 4°C / 39°F.

The main function of the egg yolk in an ice cream is as an emulsifier (see emulsifiers, page 22). Yolks contain a large amount of lecithin, which is a group of phospholipids that act as the emulsifying agent. The texture of the finished product, and this includes any frozen dessert containing egg yolk, is vastly determined by the egg yolk. Egg yolks are also responsible for flavor, yet excessive use will give an "eggy" taste, which is not the desired result.

Nonfat Solids, Water, Fat, and Serum Solids Content of Dairy Products

The following chart shows the nonfat solids, water, fat, and serum solids percentages of the most commonly used dairy products. This chart will be of use when calculating the formula(s) for producing ice cream, gelato, and sherbet (see formulas, page 61). You will notice that if you add the nonfat dairy solids to the fat, you will obtain the total serum solids, except for the egg yolks, which contain no dairy whatsoever. See the resources on page 425 for a list of farms that produce high-quality dairy (in New York State).

PRODUCT	NONFAT SOLIDS (%)	WATER (%)	FAT (%)	SERUM SOLIDS (%)
Whole milk	8.4	88.0	3.6	12.0
Skim milk	9.2	91.0	0.1	9.3
Heavy cream (30% fat)	6.4	63.5	30.0	36.4
Heavy cream (35–36% fat)	6.0	59.0	35.0–36.0	41.0–42.0
Heavy cream (40% fat)	5.5	54.5	40.0	45.5
Butter	2.0	16.0	82.0	84.0
Nonfat dry milk	96.0	4.0	<1.0 (trace amounts)	96.0
Egg yolk	17.0	50.0	33.0	-

The Best Vanilla Ice Cream

Sometime ago I used eggs from a breed of chicken named Araucana to make vanilla ice cream. Araucana hens are originally from South America (Chile) but can be easily found throughout the United States. They are considered an heirloom chicken, almost a purebred that has been around since the sixteenth century. There are many Araucana enthusiasts, and if you do a quick search online, you will find entire Web sites dedicated to this particular breed, but for breeding and instructional purposes only, not cooking. You will be hard-pressed to find any mention of the outstanding qualities of the eggs they produce. Being a rather small chicken, they produce small eggs that have shells that come in a variety of green and blue pastel hues. The flavor of these eggs is very intense, tasting as an egg should, but without being too "eggy." As of this writing, a dozen of these eggs costs around four times as much as commercially produced eggs, which is considerable but also a worthwhile price increase. Used in my ice cream, they had the same physical emulsifying effect that regular eggs have on an ice cream base, but the flavor and color of the base was surreally good; it was as if I had never had ice cream before. I also decided that as long as I was splurging on Araucana eggs, I would use the freshest handpicked Tahitian vanilla pods that I had ever come across. These were provided by an obsessive spice monger based out of New York City who travels the world searching for the best of the best (see resources, page 425). These pods were plump and moist, and their skins were dusted in minuscule vanillin crystals. My hands smelled like vanilla for two days. It was, in my opinion, the best vanilla ice cream I had ever had. Ridiculously expensive, but a definitive standard of excellence.

Sugars

While there are many kinds of sugars, only those that are used for frozen desserts will be explained here. Sugar-free sweeteners are not covered. The first and most obvious role of sugars is to sweeten. Consumers expect sweetness in frozen desserts, unless it is otherwise specified on the menu. The second role, which is just as important, is to lower the freezing point of liquids to −10°C / 14°F, which is the ideal serving temperature for frozen desserts. This creates a product that doesn't freeze too hard, which would render it difficult to scoop, and difficult and unpleasant to eat. The sugar keeps a certain amount of water unfrozen (about 28 percent) by retaining it, which keeps large ice crystals from forming or binding to each other. The sugar sits between the ice crystals, holding them together but keeping them from touching each other so they won't fuse into a larger ice crystal. The remainder is a concentrated sugar solution. It is because of this and the air that has been incorporated that ice cream, gelato, sherbet, and sorbet can be scooped and made palatable. Sugars account for 12 to 16 percent of the final weight of an ice cream base, and 25 to 30 percent of a sorbet base.

The type of sweetener(s) used will greatly influence the outcome. They can improve texture and mouth feel and enhance flavors and are an economical source of total solids used in a formula. As beneficial as sweeteners are, if used improperly (too much, too little, or added at the wrong time) they can yield very poor results.

The most common sweeteners used to manufacture frozen desserts are:

- Granulated or crystalline sugar
- Powdered or atomized glucose
- Dextrose
- Invert sugar or trimoline
- Honey
- Lactose (found in nonfat dry and liquid milk)

The sweetening power is always determined by how it compares in sweetness to granulated sugar. The level of sweetening in granulated sugar is 100 percent.

The following chart compares the sweetening power of other sweeteners to sugar. This chart will be used to determine the percentage of sweeteners used to formulate recipes further on in this book.

Sweetening Power

SWEETENER	% SWEETENING POWER	% SOLIDS	% LIQUID
Granulated sugar	100	100	–
Powdered or atomized glucose (DE 40)*	45–50	95	5
Dextrose powder	70–75	92	8
Invert sugar (trimoline)	125	78	22
Honey	130	Varies	Varies
Lactose	16	100 (in nonfat dry milk)	5 (in liquid milk) 95 (in liquid milk)

*DE: Dextrose Equivalent (see below)

GRANULATED SUGAR (a.k.a. Crystalline Sugar) Extracted from the sugarcane or sugar beet, this is the most widely used sweetener in frozen desserts. There is a variety of crystal sizes available, from regular granulated to superfine. The smaller the crystal, the faster it dissolves in a liquid.

POWDERED GLUCOSE (or Atomized Glucose) and Dextrose Powder Glucose syrup is obtained from the hydrolysis of starch (water plus an acid), most commonly cornstarch. Glucose syrup is categorized according to its Dextrose Equivalent (DE). The DE stands for how much of the starches have been broken down into simple sugars. Dextrose is one of the main components of starch, so the DE of any given glucose syrup will give us an approximate number of how many (in percentage) of the bonds in the starch have been broken down to dextrose. Pure dextrose has a DE of 100 (or 100 percent), while the most commonly available glucose syrup will be close to 42 or 43 percent. The higher the DE in a sugar, the sweeter it will be and the more it will depress the freezing point of a liquid.

Glucose powder, or atomized glucose, is glucose syrup that has had 95 percent of its water content removed. Dextrose powder is 8 percent water (see the preceding table) and it is the result of the complete hydrolysis of water, starch and, in most cases an acid (sometimes an enzyme).

Both sugars in powdered form are used to prevent ice creams and sorbets from crystallizing. They reduce the amount of sugar needed in a recipe because they can be used as a source of solids in a sorbet or ice cream base without adding too much sweetness, as using pure granulated sugar would. In other words, these types of sugar contribute more to structure than sweetness. If too much of them is used, though, the finished product may have a rubbery texture.

Using liquid glucose is not recommended since it contributes unnecessary water to the formula. If you are using a liquid sweetener, trimoline is better because it is not as sweet as liquid glucose. Although liquid glucose is not the preferred choice, it is more readily available than trimoline. Glucose powder is sweet, but in its solid form it is not necessary to use very much of it because it contributes to structure more than it does to sweetness. Also, liquid glucose adds unnecessary water. We want its solids for structure and mild sweetness, not its liquids, which can throw off the balance of a recipe.

Powdered glucose, dextrose, and trimoline are much more effective than granulated sugar at lowering the freezing point of frozen desserts because their molecules weigh much less.

Most recipes for ice cream and sorbet you find in contemporary books will contain a combination of granulated sugar, powdered glucose, and dextrose. As a matter of personal preference, I use a combination of granulated sugar and powdered glucose, because I find the addition of dextrose contributes to too much sweetness in the finished product even though

Glucose

Trimoline

the physical effect of the dextrose on the finished product is technically the same; in other words, there is no tangible negative impact on the frozen product with the absence of dextrose.

Note that glucose and glucose syrup are not the same thing. These terms are very easily confused since the word "syrup" is sometimes dropped from "glucose syrup." Dextrose is also known as glucose, and in this book only the term *dextrose* will be used, for clarity. Powdered glucose and dextrose cannot be interchanged in a recipe since they have slightly similar properties but a very different sweetening power.

INVERT SUGAR (Trimoline)

Trimoline has the same properties as dextrose but is much sweeter. It is widely used for ice creams and sorbets that have a tendency to freeze too hard, such as chocolate ice cream. Invert sugar is made by breaking down sucrose (through an acid) into its two components, fructose and dextrose, thereby reducing the size of the sugar crystals. Because of its fine crystal structure, invert sugar produces a smoother product and is used in making fondant and other syrups. It has a cloudy appearance. The intention of showing the trimoline and glucose side by side is to show how physically different they are, and to emphasize further that they cannot be interchanged in a recipe without a significant impact on the final result.

Trimoline and powdered glucose have the property, among others, of retaining some, but not all, of the water throughout the ice cream base. This retained water is not freezable. The more water that is retained by these sugars, the smoother the ice cream, sherbet, or sorbet will be, because it will harden less at very low temperatures. Yet if an ice cream made with trimoline is left at room temperature, and another made with powdered glucose is left at room temperature as well, the latter will be firmer than the former, because trimoline can retain more water. Powdered glucose has a higher freezing point than sugar and trimoline, which means it freezes much faster and therefore hardens more than products made with the other sugars. In the chapter on formulas, you will see that these sugars can be used in combination, because they each have a role to play toward the end result.

HONEY Honey is rarely used. Because of its viscosity, it can be used similarly to invert sugar, but there are two important factors to consider when using honey: it is sweeter than any other sugar available, and it has its own flavor, whereas other sugars used for frozen desserts do not.

LACTOSE Lactose has a very low sugar content. If used in excess, it will make the final product feel sandy. Lactose is generally not used to sweeten; it happens to be a part of milk, a key ingredient in ice creams, gelatos, and sherbets.

OTHER SUGARS Some sugars, such as dark brown, light brown, muscovado, Demerara, and piloncillo, have very distinct flavors.

These flavors have to do with the amount of molasses contained in each one. They are listed in the previous sentence from the smallest to largest amount of molasses contained in each sugar. (Light and dark brown sugar are essentially the same product, except for the color.) Molasses contains moisture, so this is an important factor to consider when formulating a recipe with one of these ingredients.

Stabilizers

A stabilizer is an ingredient that contributes to the uniformity and consistency of a product throughout its different processing stages, from manufacture through its frozen storage. Stabilizers aren't chemicals at all; they are extracted from natural sources.

Stabilizers promote air incorporation and even air bubble distribution throughout the frozen product as well as prevent the collapse of such air bubbles, which are responsible for some of the product's texture and mouth feel. They prolong the shelf life of ice creams, sherbets, and sorbets at very low temperatures by absorbing and gelling the water portion of the previous items. This property will prevent the jellified water from forming large ice crystals during the freezing process, which can decrease the product's smoothness. Smaller ice crystals are mostly undetectable. Consider that any given recipe will contain anywhere from 55 to 70 percent water, which in even the most ideal conditions can develop large ice crystals, thus compromising the general quality of the product. The effect of stabilizers is similar to what a sponge would do with water or most any liquid: absorb it, but not only that, immobilize it. Stabilizers contribute to the product's texture by slowing ice crystal growth. This capacity for absorbing and gelling water depends on the type of stabilizer used. Stabilizers are often used in combination with each other.

The stabilizers that a large ice cream manufacturer uses are the same ones that would be used in a small operation. The difference resides in the amount that is added to a recipe. A small batch of ice cream should spend no more than 18 to 20 hours in a freezer once churned, for quality purposes. The recommended amount of stabilizers to add is the equivalent of a maximum of 1 percent of the total weight. Large manufacturers need to keep their frozen product soft enough to scoop for months on end. The average percentage of stabilizers they use is close to 3 percent. In all fairness, not all ice cream manufacturers use stabilizers, but stabilizer-free ice creams that will spend a good amount of time in a freezer in the supermarket or your home are usually loaded with air to reduce ice crystallization in order to help keep the product smooth. Air is what the customer ends up paying for.

There are conflicting opinions on the use of stabilizers. Some pastry chefs will argue that using them is cheating, that a good pastry chef doesn't use or need "chemicals" to make a high-quality product. Others say that it makes the product gummy and unpalatable. Pro-stabilizer pastry chefs will say that stabilizers help keep their ice cream at a consistent texture during an entire service, that the ice cream doesn't melt as quickly (they will have a more uniform meltdown), and that they help deliver flavor more intensely.

When a freezer is opened and closed as often as it is in a busy restaurant, the freezer will have a hard time recuperating its temperature quickly enough to bring all of its contents back to the intended temperature (–10°C / 14°F). Most kitchens run very hot, even during the winter. Very few restaurants can afford to equip their pastry station with temperature and humidity control. It is because of this that many pastry chefs will opt to use stabilizers. Another effect that stabilizers have on an ice cream, sherbet, and sorbet is that they delay the product from melting at higher-than-ideal temperatures, meaning anything above –1°C / 30°F. The ideal holding temperature is –4°C / 24°F, and it can fluctuate a little above or below without significant change. A stabilized ice cream will resist

environmental changes (also known as "heat shock") much better than an unstabilized one.

The following are the most commonly used stabilizers for frozen dessert production, in no particular order.

AGAR-AGAR It is extracted from red seaweed of the genera *Gracilaria* and *Gelidum*. It remains in a gel consistency up to 80°C / 176°F, breaking down at higher temperatures. It comes in a solid form and in a powder form. The powder form is recommended because it dissolves more readily in liquids, but it is not recommended for thick purées or liquids with a high fat content. It absorbs large amounts of water. It is activated by heat and its gelling effect is quick, because it gels as it cools down below 80°C / 176°F. It isn't used in ice creams as much because its gel tends to be harder than desired. A variation on agar, called "chelated agar" produces smoother gels. Agar-agar is recommended for sorbets and sherbets.

Different stabilizers will gel liquids to different consistencies, making them pliable like carrageenan (left) or crumbly like agar-agar (right).

GUAR GUM It is harvested from the endosperm of the seeds from the guar bush, grown in India and also Texas. It is often used in combination with locust bean gum and carrageenan, because if used alone it is not as quick to react to changes in the environment (heat shock). It is widely used because it is a relatively inexpensive stabilizer, it dissolves well in water and moderate fat concentrations, and it contributes to the body of the product. The amount used ranges from .07 to .2 percent of the total weight of the formula. Some pastry chefs do not like the bean-like flavor it can give. Guar gum is recommended for ice creams, sorbets, and sherbets.

LOCUST BEAN GUM (a.k.a. Carob Bean Gum) It is derived from the endosperm of seeds of trees that grow in Africa. It is not used so much for its gelling properties but rather for its capacity to enhance aeration and for protecting the frozen product from frequent heat shock by insulating ice crystals. It is activated in liquids at 76°C / 170°F, in which it will fully hydrate during the pasteurization process (see pasteurization, page 48). If used alone it won't absorb as much whey from a dairy product, and some of it might separate. This is called "whey-off." That separated whey will freeze into large ice crystals. For this reason, it is used in combination with kappa-carrageenan, which corrects the problem. The amount used is the same as for guar gum. Carob bean gum is recommended for ice creams, sorbets, and sherbets.

GELLAN GUM It is obtained from fermented bacteria. Gellan gum is characterized by high gel strength, ease of use, clarity, flexibility, reliable supply, and ability to be used in a variety of combinations. It can be used as a stabilizer in ice cream, yogurt, custards, and sour cream, while its moisture retention abilities can enhance baked products. It needs to be heated to 85°C / 185°F to fully hydrate, and must be allowed to cool in order to gel properly. Highly saline liquids break the gel. Gellan gum is recommended for ice creams, sorbets, and sherbets.

XANTHAN GUM A by-product of the fermentation of cornstarch and *Xanthomonas campestris,* a bacterium found in cabbage, xanthan gum is classified as a polysaccharide gum. It has great thickening power (it can thicken alcohol). It is hot- and cold-soluble and dissolves almost immediately as it comes into contact with a liquid. To activate it, it is necessary to mix it slowly with the desired liquid and leave it to hydrate for at least two minutes. It will not lose its thickening power if moderate heat is applied.

It is one of the best emulsion stabilizers because it has the capacity to keep emulsions dispersed, thanks to its suspending properties.

If you add xanthan gum to an oil-and-vinegar solution and mix them together with a handheld blender, it will make an immediate and permanent emulsion. If you add xanthan gum to a carbonated beverage and mix them together with a handheld blender, it will retain the thousands of bubbles produced by the blender's mixing and then suspend them for an extended period of time. Both of these examples help explain what xanthan gum does in an ice cream, sherbet, or sorbet. It will stabilize the emulsion very quickly and keep the air bubbles suspended evenly and permanently during the churning process.

Xanthum gum is highly resistant to freezing and melting. Use it in combination with other similar stabilizers, such as locust bean gum and guar gum, which can be added to the mix together and are activated similarly. If used in excess or by itself, it can make the frozen product chewy. The amount used is between .02 and .04 percent of the total weight of the formula. It is rather expensive, but again, the quantity used is minimal. It is recommended for ice creams because of its excellent fat-molecule-stabilizing properties.

All gums require that they be hydrated in order to work. Failure to hydrate gums properly is the leading cause of problems in foods containing gums because the gums remain in a clump and do not work effectively.

CARRAGEENAN Carrageenan is extracted from Irish moss and other species of red algae. This stabilizer gets its name from where it was originally harvested, a small town in Ireland known as Carragheen. Nowadays it is mostly harvested in the Philippines and South America.

There are three commonly used types of carrageenan: kappa, iota, and lambda. A kappa-iota carrageenan mix is frequently used in low-fat frozen desserts for its high gelling capacity. Each one alone forms a crumbly gel; together they are softer. Lambda carrageenan is preferred in regular-fat frozen desserts, where the fat content helps to stabilize the product without gelling. What this means is that lambda is a weaker gelling agent than kappa and iota. The amount of carrageenan used in a recipe varies from .01 percent to .04 percent of the total weight of the formula, depending on the type of frozen dessert.

Liquids, such as root beer, will not trap air and cannot maintain body when conforming to a container.

Incorporating a stabilizer such as xanthan gum into the liquid will cause it to gel and retain body.

The stabilized liquid now has body and will trap air upon agitation.

All carrageenans require heat for hydration: 80°C / 176°F. They are mixed into a cold liquid and then brought up to a boil. Gelling is almost immediate and can withstand temperatures of up to 60°C / 140°F. Carrageenan does not gel acidic liquids well. It is better suited for aqueous, dairy, or fruit products. Kappa and iota mixes are recommended for sherbets and sorbets, and lambda is mostly recommended for ice creams.

SODIUM ALGINATE Extracted from sea algae, it is considered a highly effective stabilizer because of the texture and body it adds to ice creams and sherbets, and because it can bind calcium better than other stabilizers. It is not recommended for sorbets for this reason. As much as it is a good stabilizer, it is also very expensive, but when you consider that only .18 to .25 percent of it is used in a formula's total weight, it doesn't affect small-batch production considerably.

CARBOXYMETHYL CELLULOSE (CMC) Extracted from vegetable cellulose, it gels with heat. It must first be mixed into a cold liquid by stirring vigorously, and then allowed to rest under refrigeration so it can hydrate and reach 4°C / 39°F, where its gelling properties are activated. CMC helps to reduce ice crystal growth and will never give the product a gummy texture, which occurs with some stabilizers when used in excess. It also makes the product highly heat shock resistant by promoting smaller air bubble formations, which also produces a highly desired smooth mouth feel. The amount used is between .30 to .45 percent of the total weight of the formula. It is recommended for sorbets and sherbets because it dissolves more readily in low-fat to nonfat liquids.

GELATIN Extracted from animals (pigskin), it was the original stabilizer. It is still used and produces excellent results, even when used alone. It melts between 26°C / 80°F and 32°C / 90°F and is easily incorporated into recipes, but it needs to be hydrated (bloomed) in very cold liquid first. It is recommended for ice creams, sorbets, and sherbets because it dissolves in both nonfat liquids and high-fat liquids.

PECTIN It is extracted mostly from apples and some citrus fruits and used in a powdered form. Not widely used in frozen dessert production because there are other stabilizers that have a better effect on the frozen product, it still produces good results. It requires heat to hydrate, and it gels as it cools down. Pectin is recommended for sorbets because it dissolves better in nonfat liquids.

READY-MADE STABILIZER MIXES There are different varieties of ready-made stabilizers available to pastry chefs. They are essentially a mixture of different stabilizers that interact with one another, each contributing its own characteristic stabilizing action. Being that we use only about 1 percent of the mixes in the total weight of the product, their development takes away the trouble of weighing out such small quantities and sourcing all the different stabilizers, which often come in large amounts. They produce excellent, consistent results. It is possible to make your own mix, but a very accurate scale is required for optimal results. Attention should be paid to each stabilizer's properties, such as hydration, gelling power, and percentage by weight that is recommended to add into the mix (amount of each per formula).

The following stabilizer recipes were developed specifically for this book by paying close attention to how they are activated (temperature), how they are hydrated, and which medium they work best for, but also, most important, how they can produce optimal results. In other words, a stabilizer mix for ice creams will be different than one for sorbets, but stabilizer mixes for sorbets can be used for sherbets and low-fat ice creams because of their low milk fat content. Fat can have a negative effect on some stabilizers because it prevents them from fully hydrating and dispersing evenly in the liquid.

The same quantity of commercially obtainable mixes can be substituted with similar results. They come in powdered form and are readily available through different purveyors.

Ice Cream Stabilizer Mix

Xanthan gum	200 g	7.05 oz
Locust bean gum	250 g	8.82 oz
Guar gum	250 g	8.82 oz
Monoglycerides (emulsifier)	100 g	3.53 oz
Diglycerides (emulsifier)	100 g	3.53 oz

Sorbet Stabilizer Mix

Gelatin powder	275 g	9.7 oz
CMC (carboxymethyl cellulose)	175 g	6.17 oz
Locust bean gum	250 g	8.82 oz
Guar gum	250 g	8.82 oz

Emulsifiers

Emulsifiers are used to prevent the separation of fat-in-water emulsions. They are sometimes seen as stabilizers because they stabilize emulsions. Emulsifiers are molecules that are composed of a hydrophilic (water-loving) part and a lipophilic (fat-loving) part. When these molecules combine, they make it possible for water and fat droplets to become finely dispersed in each other, creating a stable emulsion. This is what gives ice cream a smooth texture, slower meltdown, and better freeze-thaw stability.

Emulsifiers are added to modify ice cream during churning by, ironically, destabilizing the original fat emulsion found in the milk and/or heavy cream used in a recipe. The fat globules begin to destabilize as the ice cream machine churns. The air bubbles that are being beaten into the mix are stabilized by this partially destabilized fat emulsion. If emulsifiers were not present, the fat globules would resist this binding caused by the milk proteins being absorbed into the fat globule, the minuscule air bubbles would not be properly dispersed and "trapped," and the ice cream's texture would suffer. It is the same thing that happens while whipping heavy cream (see page 91), and this is why ice cream is not only considered an emulsion, but also a foam (see page 92).

The most frequently used emulsifiers are extracted from palm oil, rapeseed oil, soybean oil, sunflower oil, lard, and egg yolks. Since they have a direct effect on fats, they are used exclusively for ice creams. It is one fat emulsion working on another fat emulsion. Sorbets contain no fat and sherbets contain minimal fat, therefore they do not require emulsifiers. The amount of emulsifiers added to a formula is .2 to .3 percent of the total weight.

MONOGLYCERIDES AND DIGLYCERIDES Also known as E 471, these are derived from the partial decomposition of animal or vegetable oils or fats by reaction with water (hydrolysis). Their scientific definitions are as follows:

- A monoglyceride is a glyceride consisting of one fatty acid chain covalently bonded to a glycerol molecule through an ester linkage.
- A diglyceride is a glyceride consisting of two fatty acid chains covalently bonded to a glycerol molecule through ester linkages.

Monoglycerides and diglycerides are always used in combination. Used alone, they lack emulsifying strength. These are the emulsifiers used in this book because of the qualities they contribute to the final product. Their emulsifying properties contribute to a uniform base that will churn or freeze evenly and result in a high-quality product. They can be found through specialty pastry ingredient providers.

POLYSORBATE 80 Commercially known as Tween 80, it is an amber-colored viscous liquid derived from sorbitol, which is a sugar alcohol the body metabolizes slowly. It is obtained by the hydrogenation of glucose and is often used in ice cream to prevent milk proteins from completely coating the fat droplets. This allows them to join together in chains and nets, to hold air in the mixture, and to provide a firmer texture, holding the ice cream's shape as it melts.

EGG YOLKS The particular emulsifier here is the lecithin (protein) found in egg yolks; this was the original emulsifier. It is still used as such, but it is not as strong as the previously discussed emulsifiers. The flavor they deliver has a more cherished quality (see Caramel Ice Cream, page 375; the amount of egg yolks is large, yet it can be reduced by adding other emulsifiers if a lower-fat ice cream is wanted).

As with stabilizers, emulsifier mixes are commercially available, and most are of dependable quality. So it is not necessarily convenient to make one's own emulsifier mix because the commercial mixes are easily available and somewhat economical, and they contribute the same results as a homemade mix.

Fruits and Vegetables

FRUIT There seem to be many conflicting arguments as to what makes a fruit a fruit. The following is the definition of fruit according to *Encyclopaedia Britannica:*

> *In its strict botanical sense, the fleshy or dry ripened ovary (enlarged portion of the pistil) of a flowering plant, enclosing the seed or seeds. Apricots, bananas, and grapes, as well as bean pods, corn grains, tomatoes, cucumbers, and (in their shells) acorns and almonds, are all technically fruits. Popularly, the term is restricted to the ripened ovaries that are sweet and either succulent or pulpy. The principal botanical purpose of the fruit is to protect and spread the seed. There are two broad categories of fruit: fleshy and dry. Fleshy fruits include berries, such as tomatoes, oranges, and cherries, which consist entirely of succulent tissue; aggregate fruits, including blackberries and strawberries, which form from a single flower with many pistils, each of which develops into fruitlets; and multiple fruits, such as pineapples and mulberries, which develop from the mature ovaries of an entire inflorescence. Dry fruits include the legumes, cereal grains, capsules, and nuts. Fruits are important sources of dietary fiber and vitamins (especially vitamin C). They can be eaten fresh; processed into juices, jams, and jellies; or preserved by dehydration, canning, fermentation, and pickling.*

Hopefully, this definition will clear the confusion. Yet, what about certain fruits that would normally contain seeds but do not, such as bananas, navel oranges, limes, seedless watermelons, and grapes? Their plants are called *parthenocarpic,* which means they can develop fruit without fertilization by the addition of growth hormones or excessive temperatures during the plants' flowering.

Fruit should be eaten preferably when the seeds have matured, meaning that the fruit has ripened. Once the fruit has reached its ripening

peak it begins to decay and will eventually die. Enzymes are directly responsible for ripening the fruit by breaking down complex molecules into simpler ones. Some fruits, however, contain ethylene, a gas that functions as a hormone in plants. It stimulates the ripening of fruit, the opening of flowers, and the shedding of leaves. Ethylene expelled from the fruit can ripen other ethylene-sensitive fruits. For example, when under-ripe bananas are shipped, they are sprayed with ethylene gas when they arrive at their destination to speed up ripening. Bananas are shipped under-ripe because they are firmer that way and will withstand a long trip better than if ripened and soft. See the Seasonal Availability Chart on page 412 for more information on the seasonality, shelf life, and storage of fruit.

Before fruit reaches the ripening stage, it goes through three stages. The first is the fertilization of the female ovule by pollen (male), which leads to the expansion of the ovary wall. The second stage is when the cells in the ovary wall multiply, thus enlarging the fruit. The third stage is an accelerated growth stage, when the cells continue multiplying at a much quicker pace. Fruit can ripen on the plant and continue to ripen even after it is picked, with the notable exception of the avocado, which will only mature once it has been picked.

Ripening is visually and physically distinguishable. The fruit's skin will darken and the flesh will become soft and sweet. These are the desired characteristics of any fruit.

There are two very important reasons to use fruit that is in season:

- The fruit will be at its best, and it will usually be shipped from a nearby area. Fruit that has to travel 3,000 miles to reach your kitchen will be picked before its prime so it can withstand the long trip and not decay before it can be sold.
- It is more economical.

Fruit is the key component of most sorbets and some sherbets, gelatos, and ice creams. Although some sorbets contain no fruit at all (e.g., herb- or spice-infused water), fruit is more commonly used. Great care must be taken when handling and storing fruit so that when it is incorporated into a recipe it will be at its best. Fruit can be refrigerated to retard ripening (between 1°C / 34°F and 5°C / 41°F; a temperature of 1°C / 34°F is ideal for most fruits, with a relative humidity of 90 to 95 percent), but it can be kept at room temperature to speed up the ripening process if it will be used within 48 hours of receiving, or longer if the fruit is grossly under-ripe, like green bananas. It is a good practice to taste the fruit before purchasing, but if this is not possible, it should be tasted before it is processed into a frozen product.

Organic fruit can be better, but not necessarily. It is a good idea to support organic foods, if and when they are better. When using organic fruit, it is very important to wash the fruit thoroughly before it is used. Remember, organic foods are pesticide-free and are sometimes fertilized with manure.

Fruits that oxidize, meaning that they react to contact with oxygen once the flesh is exposed, turn from dark brown to black. This oxidation can be prevented by combining the fruit with ascorbic acid powder (vitamin C crystals) in small amounts. Ascorbic acid is extracted from citrus fruits. A simple solution of 1 liter of water and 1 teaspoon of ascorbic acid can be used to

submerge the fruit for a few seconds as soon as it is peeled and then patted dry. This, however, will only slow down the process. Ideally, if the fruit is puréed with the ascorbic acid as soon as the skin is removed, oxidation will be completely stopped. For every liter of fruit purée, add 1 teaspoon of ascorbic acid. Bananas, apples, stone fruits, and avocadoes are a few examples of fruits that oxidize quickly. Be careful not to exceed the recommended amount of ascorbic acid, because the fruit will end up with a highly acidic taste that will be unpleasant. Citrus juices (lemon, lime) certainly may be used but are not as effective as ascorbic acid at preventing oxidation over the long term.

Fresh vs. Factory

Fresh fruit will always be the best choice, as long as it was properly handled from plant to kitchen and is at its peak. There are many factories that process fruit purées, but only a handful are of very high quality, and they are correspondingly of very high price (for resources, see page 425). There is one benefit to factory-made purées and that is the consistency of the qualities of the product; the flavor, texture, sugar content, solids, and acidity are always the same. The fruit they use is carefully monitored to be processed at the right moment to maintain that consistency, liter after liter. If using factory-made purée, keep in mind that an average of 10 percent of the total weight will be sugar, which is added, along with a few chemicals, to preserve the product. This will be important to consider when formulating a recipe.

VEGETABLES While vegetables are rarely used to produce frozen desserts, they are extensively used in savory preparations (see savory items, page 108). Most of the vegetables used in that chapter are technically fruits, such as avocadoes, tomatoes, and cucumbers, but because of their lower sugar content are incorrectly known as vegetables. Besides the sugar content, there is another characteristic that differentiates fruits from actual vegetables, and that is that vegetables do not ripen at all post harvest. Once they are picked from the plant, they begin to decay. While fruits can improve, vegetables deteriorate.

Flavors

Not to be confused with "flavorings," flavors are any ingredients that can be added to a liquid in a liquid or paste form, or steeped into a liquid (such as herbs and spices), to contribute their flavor to the finished product. The liquid is usually water, milk, or heavy cream, the basis of most frozen desserts. Artificial flavors are not recommended because they will never taste as good as the real thing. Flavorings are added exclusively for the taste they contribute, and while herbs and spices fall into this category, they also fall into the broader category of "flavors." Fruits are considered flavors as well for obvious reasons, but they are such a large category that it is necessary to give them a place of their own.

As with all ingredients, the timing and manner in which flavors are added to a recipe, as well as their quality, are vital to a high-quality finished

product. As for pastes, liquids (such as melted chocolate), and fruits, it is important know the following in order to have a well-balanced recipe: fat content, solids content, sugar content, and water content. Most fruit has no significant fat content, except for some notable examples such as coconut and avocado. Refer to the table on page 410 for solids content and sugar content as well as acidity for fruits. The water content is inversely proportionate to the solids content.

The following is a list of the most commonly used flavors:

VANILLA BEANS The ideal form is in their natural state, in other words, as pods. Though commonly referred to as vanilla "beans," because they do contain beans, they actually grow as the pod from a type of orchid. They are originally from the Gulf Coast of Mexico, but are also grown in Tahiti, Madagascar, and Indonesia, where the quality can be outstanding. Other, lesser known, vanilla-growing countries are India, Uganda, Papua New Guinea, and even the United States (Florida).

There are close to 150 varieties of vanilla pods that grow in tropical climates around the world, but Bourbon and Tahitian are the most widely used.

Bourbon

When grown in Mexico, they are known as Mexican vanilla beans (pods), but if the same plant is grown in Madagascar or Indonesia, they are known as Bourbon vanilla beans (pods). Some Bourbon pods may develop over time what the French call *givre,* which is a frosting of natural vanillin crystals. This is an indication of very good quality. Do not confuse these crystals with mildew. Crystals are sparkling white, mildew is dull green.

Tahitian

The original plant is also from Mexico, yet it is considered its own species. The flavor of each variety is determined by species, but also by the soil, climate, and curing process. Plants of the same species that are planted 10 miles apart will have subtle flavor differences. Mexican Tahitian vanilla pods and Madagascar Tahitian vanilla pods have a significantly different flavor. A good vanilla bean will be plump and have an oily skin and an intense aroma. Low-quality beans will be dry to the point of being brittle, and their aroma will be weak.

In order to obtain the most flavor from a vanilla pod, it is recommended to split the vanilla pod in half with a paring knife and scrape the beans off with the back side of the knife. Beans and pod should be added to the liquid from the beginning of the cooking or heating process, when it is still cold. Heat is the best way to extract the most flavor from the vanilla pod. The type of vanilla used in any given recipe is entirely up to the pastry chefs' personal preference. In this book, Tahitian vanilla is the preferred variety.

To store vanilla pods, keep them in an airtight container, such as a jar or a tea tin. If exposed to the air for long periods of time, much of their aroma will dissipate. Since vanilla pods are expensive, it is in the pastry chef's best interest to preserve the aroma and taste properly.

Other forms of vanilla are:

Extract

Using extract is not recommended. Even high-quality extracts that actually contain or are made from vanilla pods have a weak and artificial

flavor, bordering on “alcoholic.” Extract also tends to darken liquids.

Powder

This is recommended with reservations, because the flavor is not as intense.

Paste

Vanilla bean paste is recommended for baking and cooking purposes only, where steeping is not possible. As with extract, it darkens liquids.

CHOCOLATE This book is not about chocolate, therefore we will focus only on its role in frozen desserts. As previously mentioned, it is important to determine the fat content, sugar content, solids content, and water content. Chocolate does not contain water, so we only have to consider the other 3 ingredients. The table below is an approximate amount for most chocolate brands.

Chocolate is often added at the end of the heating process, since placing it in a pot over heat can cause it to burn. For aerated still-frozen desserts, it is melted over a hot water bath.

STEEPED FLAVORS Steeped flavors differ from other flavors because all they impart is flavor and they have little or no significant impact on texture. To steep, it is necessary to measure between 2 and 5 percent more of the total weight of the principal liquid (water, milk, heavy cream), because once the ingredient is extracted from the liquid, it will take away with it some of the liquid, which will affect the balance of the recipe. It is a good idea to weigh out the liquid again after the flavor has been steeped in order to obtain the right amount. It is better to take away a small amount of liquid than to add unflavored liquid that will dilute the flavor.

Coffee

For best flavor, finely and freshly ground strong coffee beans should be added to a liquid that is heated to 93°C / 200°F, which is the ideal brewing temperature to make regular drinking coffee. Hotter liquids will make for an unpleasant taste. Coffee extract is not a viable replacement for frozen desserts, because it adds water and has an unnatural coffee flavor. Homemade coffee extracts are recommended for flavoring aerated still-frozen desserts, but, for example, in a coffee semifreddo, it is possible to steep the heavy cream, chill it, and then whip it. Soluble coffee is, while not the ideal, a decent substitute.

Citrus Zest

A rasp is a good tool for extracting a thin layer of citrus zest. Most of the flavor is in the oils contained in the fruit’s skin, and for this reason some pastry chefs prefer to zest the fruit directly into the liquid so that all of the flavor ends up in it. If the fruit is zested onto one surface and then

CHOCOLATE COCOA (LIQUEUR) %	SUGAR %	FAT %	DRY COCOA %
100	0	54.05	45.95
70 (Bitter chocolate)	30	42.7	27.3
66	34	40.6	25.4
64	35	40.0	24.0
61	39	34.2	26.8
56 (Semisweet chocolate)	44	37.1	18.9
45 (Milk chocolate)	55	30.0	25.0
0 (White couverture)	55	30.5	14.5 milk
Cocoa powder (100% cocoa)	0.0	18.0	82

transferred to the liquid, most of the all-important flavor will be lost.

Peeling the fruit with a peeler or knife will create larger pieces of zest that will not steep as effectively. Larger pieces are recommended only for long cooking and steeping times.

Spices

Whole spices perform better than ground spices, because once they have steeped in the liquid, they can be completely strained out. Ground spices are very fine powders than can pass through even the finest-mesh strainer and give the frozen product a gritty texture. This holds true especially for ground cinnamon, which also has a slight thickening effect on liquids when hot. Toasting the spices and then adding them to a hot liquid will increase the flavor significantly.

Herbs and Teas

Herbs can be added in two ways. They can be added to a hot (not quite boiling) liquid and left to steep for no more than 8 to 10 minutes. This is recommended for sturdy herbs, such as rosemary, thyme, and bay leaf. For teas, such as Earl Gray or jasmine, it is especially important to keep an eye on steeping time and on the temperature of the liquid. Excessive steeping time and high temperatures will produce an unpleasantly bitter flavor. For more delicate herbs, such as basil, mint, and lemon verbena, steeping time is reduced to 2 minutes in a liquid that is no hotter than 77°C / 170°F. Any hotter and the flavor will turn bitter.

An herb can be used as an actual ingredient and not just a flavor, though it is advised to do so only with water-based frozen desserts and with more delicate herbs. First, they must be blanched in boiling water for 10 to 15 seconds, then shocked in an ice bath and puréed in cold water that has been taken from the measured amount for the recipe. This herb water must be strained through a fine chinois, then added to the rest of the measured water, and finally weighed out again to obtain the necessary amount.

Nuts

Hot toasted nuts added to a hot liquid will give the most intensity of flavor. Toasted nuts that have cooled off before being added to a hot liquid will not give off as much flavor. Covering the liquid with plastic wrap will keep the product hot and therefore improve the steeping by concentrating the heat. Nuts can be left in the liquid for up to 24 hours for best results.

Nut Pastes

These should be considered in the percentage of solids that will be a part of the recipe. Some praline pastes will combine into a recipe completely, but almond paste will not, leaving a small amount of solids behind once the base is strained. They also contain a considerable amount of fat, which will contribute to the smoothness of the finished frozen product.

ALCOHOLIC BEVERAGES

Liquors should always be used in moderation for two reasons: they can give an excessive alcoholic taste, and liquors with a high alcohol percentage can affect freezing, since alcohol doesn't freeze. It is recommended to cook off the alcohol before adding the liquor to a recipe. This will maintain the flavor and eliminate the alcohol. For lower-alcohol-content ingredients, such as wine and beer, a reduction is recommended. The exception would be for items in which the beer or wine is the main ingredient in a sorbet, ice pop, or granité. The percentage of alcohol is low enough that the flavor will not be offensive and the freezing point will not be significantly affected.

POWDERED FLAVORS This refers to ingredients that dissolve into liquids regardless of their fat content, such as malt powder. Even though they are dissolved, they should be considered in the percentage of solids in a recipe.

VARIEGATED OR SWIRLED GARNISHES This refers to fluid garnishes, such as jams or caramel. While they are not mixed into the base directly, they are gently folded into the frozen product as soon as it comes out of the batch freezer. The liquid garnish can be alternately layered with the frozen product so that when it is scooped, there are distinguishable layers of items such as vanilla ice cream and strawberry jam. This procedure is also possible with a Pacojet, but the fluid garnish must be added as soon as the product has been pacotized, when the product is still rather smooth and the fluid garnish will not sink to the bottom and can be swirled evenly throughout the frozen product.

SOLID FLAVORS This means any solid garnish that will not be dissolved into the base, such as nuts, chocolate chips, or caramelized fruit. These cannot be added into the base in its liquid from, because they will sink to the bottom. They must be added when the product is close to being extracted from the batch freezer so that they will be evenly distributed. The ideal temperature of the churned base for this is –5°C / 22°F, where it has enough density to withstand the weight of the garnish. For pacotized items, fold the garnish in as soon as the item has been pacotized, when the product is smooth enough to stir the garnish in, but not so smooth that the garnish will sink to the bottom.

Water

Some say that New York City tap water is among the best-tasting in the country. Granted, they haven't tasted the tap water in every single city in the United States, but New York water has a very clean, crisp, and fresh taste that is suitable for sorbets, ice pops, and granités. Having said that, it is important to know what is in the water that comes out of the tap in your area. Hard waters have a very unpleasant taste, not to mention a number of minerals that will affect the texture of your finished product. If you are unsure of the water's quality, it is best to use inexpensive bottled water, just to be on the safe side. This will also ensure a consistent product that you can count on.

chapter three Equipment, Machines, and Tools

INVESTING IN THE RIGHT MACHINES, TOOLS, AND EQUIPMENT TO MAKE FROZEN DESSERTS IS CRUCIAL ON MANY LEVELS. Not having enough products and having too many are the extremes that we want to avoid. Not having the right setup can have a significant impact on your workplace, since the needs of a 200-seat restaurant are not the same as the needs of an ice cream parlor, even though both establishments will produce basically the same product. There are machines that are indispensable for any establishment, however, such as a freezer in which to store desserts and deciding which one is best for you is what this chapter is all about. A Pacojet may not be the best idea for the 200-seat restaurant, because it can process only small amounts at a time, but it would be the right machine for a 50-seat restaurant, since it takes up less space and works very quickly.

It isn't enough to have the technical knowledge of frozen dessert manufacture; there is always the bottom line to think about. There isn't anything wrong with keeping an eye on the money, since ultimately that is what a successful establishment needs in order to stay in business. There is a fine balance between producing high-quality frozen desserts and being smart about where your money goes. This chapter will help you make the right decisions.

Having the appropriate equipment, machines, and tools to produce frozen desserts is just as important as having the right ingredients. Understanding how they work and what they are meant to do will result in an efficient working environment that will produce a superior product.

Production Equipment

It goes without saying that any kind of production requires the correct mise en place. The mise en place is not limited to ingredients. It also encompasses knowledge of method and production equipment. Without the right tools, efficiency is limited and the risk of making mistakes is increased. The following is a list of the most commonly used tools for frozen dessert production, along with a brief description.

SCALES Digital scales are more accurate than springform scales and balance-beam scales as long as they are properly calibrated. Springform and balance-beam scales should be avoided when precision is required, but they are acceptable for larger amounts, for example, 50 pounds of sugar as opposed to .2 grams of xanthan gum. For ingredients such as stabilizers, precision scales (see photo) are required because of the small amounts that are used, which most common digital scales will not be able to weigh. These are incredibly sensitive scales that, depending on the model, can weigh almost anything, from tenths of a gram to hundred-thousandths of a gram. A precision scale that can weight tenths of a gram is sufficient for our purposes.

Comparative Chart, For Scales

TYPE OF SCALE	PROS	CONS
Balance-beam scale	Good for measuring large amounts Inexpensive	Not good for small amounts (not very precise)
Springform scale	Good for measuring large amounts Inexpensive	Not good for small amounts (not very precise)
Digital scale (widely recommended)	Gives accurate reading	Can be expensive If not properly calibrated, will not scale properly
Precision scale (widely recommended)	Gives accurate reading of very small amounts	Can be expensive Usually has a very small weight capacity

POTS AND PANS Choosing the right pots or pans is part of the equation for obtaining successful results. Using low-quality equipment makes as little sense as using low-quality ingredients. While they may produce positive results for short periods of time, eventually they wear out and might have a negative effect on your finished product, which can range from physical poisoning (metal particles) to chemical poisoning (metals reacting to other metals) to developing "hot spots" where your mix can overcook. In that way, cheap equipment can become expensive. It is better to make an investment in a good pot that will last five to ten years rather than to buy one that needs to be replaced every two years.

While copper is by far the best heat conductor, it can produce chemical reactions with other metals (such as the stainless steel found in whisks) that will create a health hazard. Stainless steel pots that are coated with copper on the outside are the next best choice, yet in many cases they can be prohibitively expensive. A sound alternative is stainless steel, specifically 18/10 stainless steel pots and pans. Stainless steel is available in two qualities: 18/0 and 18/10. The "18" is the percentage of chromium that is added to the steel, which makes it stainless, enabling the steel to form an invisible layer of oxide that protects against corrosion. If this layer is damaged, a new one will form immediately due to the oxygen present in air. The "10" refers to the percentage of nickel that is added, which makes it shiny, increases resistance to corrosion, makes it harder, and gives it a high resistance to temperature. A magnet will not stick to 18/10 steel but it will to 18/0 steel.

Most 18/10 pots and pans have what is called a tri-ply encapsulated bottom, which provides high heat conductivity for quick, even cooking, eliminating both cold and hot spots. Ideally, a layer of aluminum or copper will be sandwiched between two layers of stainless steel, thus improving the heat conductivity. They can be used with gas, electric, and induction burners.

Pots and pans will only be used for frozen desserts that require heat, such as the Cajeta Ice Cream on page 375. Their size (capacity) is expressed in liquid volume (2 quart, 4 quart, etc.) and will depend on the amount of product that is to be made.

WHISKS It is recommended that whisks have strong stainless steel wires with a sealed and watertight handle. Otherwise, if any liquid seeps into the handles, it is very difficult to clean them properly and as a result they will become a major source for bacteria that can cause food-borne illnesses.

There are three kinds of whisks: piano whisks, balloon whisks, and French whisks (a.k.a. rigid whisks). French whisks have the thickest wire, which makes for awkward stirring. The thin yet strong wires found in piano whisks and balloon whisks facilitate the mixing of ingredients thanks to their partial flexibility. Piano whisks and balloon whisks can also be used for whipping eggs, egg yolks, egg whites, and heavy cream. Balloon whisks tend to be rounder (hence the name) than piano whisks and facilitate the incorporation of air to a greater extent since their wires are farther apart than those in piano whisks. French whisks can be used as well to whip ingredients, but the process takes longer because the thicker wire makes for uncomfortable and awkward whisking and whipping.

All three types of whisks can be found in most cookware shops, and the price difference between them is not significant. In other words, performance is the deciding factor, not price.

RUBBER SPATULAS Rubber spatulas should be heat resistant, with a notched blade for effective scraping and cleanup. The rubber tends to deteriorate and crack over time. At the first sign of this, the spatula must be discarded. Bacteria can grow in the cracked rubber, and pieces of the rubber can get mixed into ready-to-consume foods.

THERMOMETERS Digital probe thermometers are a wise investment, since they can be used in every type of production, not only frozen desserts. They are battery operated and water resistant (some models are waterproof). The probe connects to the body of the thermometer, where an accurate reading is displayed after a few seconds of immersing the probe. Instant-read thermometers are ideal. They have highly sensitive probes that give real-time readings, as opposed to having to wait to get an accurate reading. During those few seconds, temperatures can escalate and compromise the final product. The only downside is that they can be expensive, but accuracy is well worth the extra money.

The probe thermometer on the left gives a more accurate reading because it takes the internal temperature of the mixture rather than the surface temperature.

Pocket thermometers are not recommended because they lack accuracy, and a few degrees over or under can make a significant impact on the finished product. Laser thermometers (or infrared thermometers) aren't recommended for actual cooking because they only measure surface temperatures, which are always colder than internal temperatures, especially those that are closer to the bottom of the pot. Laser thermometers function by pointing the beam toward the desired surface and then bouncing the temperature back through the beam, where the temperature is registered and displayed. These types of thermometers are ideal for taking surface temperatures of frozen desserts while they are being churned. For example, when making an ice cream that will have a solid garnish added, such as chocolate chips, the recommended temperature at which to add the garnish is -5°C / 22°F. A probe thermometer would get caught in the spinning blade, unless the machine is stopped, but a laser thermometer will work perfectly as the ice cream churns. The ice cream's surface temperature will be the same as its internal temperature. Thermometers are not only for hot products; they can reach temperatures well below freezing, depending on the capacity of the thermometer.

When taking a liquid's temperature, it is important to place the probe at the center of the liquid while stirring, so as to distribute the temperature evenly around the thermometer. This gives you a more accurate reading. As you can imagine, it is hard to whisk around the probe without it getting tangled in the whisk. A convenient solution to this dilemma is a whisk that also includes a thermometer (see photo on page 58). The temperature display is at the base of the whisk's handle and the sensor is one of the whisk's wires. This is an inexpensive alternative to other kinds of thermometers, but be sure to purchase a high-quality thermowhisk.

Baumé hydrometer

Brix hydrometer (refractometer)

BAUMÉ HYDROMETERS (a.k.a Saccarometers or Sugar Densimeters) AND BRIX HYDROMETERS (a.k.a. Refractometers) The Baumé hydrometer is used to measure the density of sugar in a liquid, and the Brix hydrometer (refractometer) is used to measure the percentage of sugar in a liquid. This liquid should ideally be at 20°C / 68°F; higher temperatures will not produce an accurate reading since the hydrometers are sensitive to temperature. They are used for wine making, beer making, and for syrups used to make sorbet bases. Hydrometers are an inexpensive substitute for a refractomer, but are not as accurate or clear to read.

The Baumé hydrometer must be carefully placed in the liquid to be measured, since agitation will produce bubbles in its interior that will not give a correct reading. Hydrometers contain a graduated scale and mercury and work similarly to a thermometer, in which the mercury rises and drops depending on the liquid's density. They measure from 0° to 50° degrees Baumé, notated variously as: degrees Baume, degrees Baumé, B°, Be°, Bé°, and Baume, where 0 has no density and 50 has the highest possible density.

A refractometer is used to measure refraction. In other words, it can measure the density of a particular liquid by how the light refracts through it. When a straw is placed into a glass of water, the straw appears bent. If the same straw is placed into a glass of water containing dissolved sugar, the straw appears even more bent because sugar "thickens" water (it makes it denser) and therefore has a magnifying effect. This is known as the principle of light refraction. Refractometers measure this refraction of light and are based on the principle that as the density of a substance increases, its refractive index (how much the straw appears to be bent) rises proportionately. If the liquid is thin, the angle of refraction is large. If the liquid is thick, the angle of refraction is small. The refractometer measures in the Brix (0° up to 32°) scale.

There are many different kinds of refractometers, ranging from economical to very expensive, and each one has a particular use and range. For frozen dessert purposes we will use only the refractometer for sorbets and granités, which is to say, it measures from 0° up to 32° Brix. Any sorbet base higher than 32° Brix will be too sweet. On the other hand, refractometers can also be used for candy making, where Brix measurements tend to be higher, so it is a good idea to have a refractometer that can read up to 90° Brix, and will therefore have more than one use in the pastry kitchen. (For availability, see the resources list on page 425.)

Brix is more straightforward than Baumé. Each degree Brix is equivalent to 1 percent of sugar in a liquid, so if the hydrometer measures 16 degrees, it means that the liquid contains 16 percent sugar. Baumé degrees are based on

the specific gravity of a substance, where each degree Baumé represents approximately 1.75 percent sugar in the liquid.

There is no accurate formula for conversion between the two measures, since Baumé is a unit of relative density and Brix is a unit of proportion. However, you may find recipes that call for a Baumé measure and you might only have a refractometer, or vice versa. You can use the following formula to get fairly good conversion approximation:

Brix degrees / 1.8 = Baumé degrees
or
Baumé degrees × 1.8 = Brix degrees
EXAMPLE: 22° Brix / 1.8 = 12.22.
The true value of 22° Brix is 12.2° Baumé.

The result will be slightly off by fractions of the correct amount, which won't be as detrimental for sorbet or granité production but can have a devastating effect in wine or beer making. Most sorbets range from 30° to 32° Brix (16.6° to 17.7° Baumé). Granités range from 16° to 19° Brix (8.8° to 10.5° Baumé). These measures apply only to nondairy frozen desserts. Dairy contains proteins that throw off Brix and Baumé measures, simply by the effect they have on liquids.

STRAINERS An 18/10 stainless steel reinforced fine-mesh strainer or bouillon strainer with a fine mesh will produce the best results. The strained liquid will have no undesired large solids left in it, making it an evenly smooth (or clear, depending on what is being strained) product. A conical strainer (see photo) will be more efficient than round fine-mesh strainers, since gravity forces the liquid to the base of the cone, which makes it easier for it to pass through the fine mesh.

Medium-mesh or perforated strainers will not give the same results, since they will let larger solids through. These strainers are better suited for sifting dry ingredients, such as flour.

ICE BATHS When a frozen dessert base requires heat for it to be made (a.k.a. heat transfer), it is necessary to cool it down to a temperature

that is considered food safe (below 5°C / 41°F) before freezing. Dairy-based products will be more sensitive to bacteria growth than those without, because bacteria love protein. The quicker a dairy-based mix is cooled down, the better, because this will reduce the propagation of bacteria. All heated liquids need to be cooled before storing and before churning or freezing. It is not a good idea to pour a hot liquid into a batch freezer to cool it down, because this will overwork the machine and, while this will not have immediate consequences, the machine will quickly deteriorate.

A granité base, which is mostly protein-free but might have been heated in order to infuse a liquid, should not be placed directly in the freezer to begin its crystallization. The steam it gives off will result in condensation that will harden inside the freezer. Its heat will also raise the interior temperature of the freezer, which will overwork the compressor and raise the temperature of other items in the freezer.

The equipment used to cool down the base depends on the amount made, but the principle is the same regardless. The liquid is poured into a container (preferably thin stainless steel) large enough to have the most amount of exposed surface possible without going to extremes

(such as using a sheet pan, which has the most exposed surface area, but the liquid inside it will easily spill with any movement). The more the liquid is spread out, the more room the heat has to escape. This container is then placed in an ice bath. The ice bath should be part of the mise en place that has to be done before any cooking occurs, so that when the mix is ready to come out of the pot, it has a place to go so that the cooking process is stopped immediately and bacteria growth is prevented.

Ice alone will not get the job done. A proper ice bath should have equal amounts of ice and water. If there is too much water, the ice will melt quickly, and if there is too much ice, the product will take longer to cool down, since the container won't be surrounded completely by chilled water. Think of how much surface an ice cube has. This minuscule surface will be in contact with the hot container's surface. Logic would dictate that the ice would melt, but the process isn't as quick as you'd think. By the time the ice melts enough to become chilled water, a considerable amount of time will have gone by. The ice bath should be big enough to fit the container with the hot liquid and have room left around its border. Care must be taken when deciding the amount of ice and water. It is best when the ice and water mix come up to the same level as the liquid inside the container. When the level of ice and water is lower, there is an amount of hot liquid that is not being cooled down. It is also important to make sure that the ice and water mix does not come in direct contact with the hot liquid, for no other reason than it will become diluted and affect the final result. For very large amounts of base, it is recommended to have more than one ice bath ready. Smaller amounts cool down faster than large ones.

It isn't enough to leave the hot liquid in the water bath to cool down. Constant whisking or stirring will distribute the cooler liquid that is closer to the stainless steel pan surface (because its exterior is in direct contact with the ice water) throughout the rest of the hot liquid.

Machines

This section refers to machines used to freeze all varieties of machine-churned frozen desserts for small-batch production. These include ice cream, gelato, sherbet, and sorbet. Small-batch production should not be confused with what one would make at home for personal consumption, either in the amount produced or the machines used. Home ice cream machines are not recommended for restaurant or hotel production because they are slow and inconvenient and often yield poor results.

The amount that is needed in a 50-seat restaurant will be different than that needed in a 300-seat restaurant or a hotel, but both cases are still considered small-batch production if a batch freezer is used and the human element plays a big part in its production. If a 5000-room hotel in Las Vegas makes its own ice cream, is it still small-batch production? It can be. In small-batch production, there is an actual person involved in most of the process (weighing out ingredients, making the base, loading the machine, storing the frozen product, and cleaning the machine). There are batch freezers that can churn up to 41 liters (11 gallons approximately) per batch, and 190 liters (50 gallons) per hour. It all comes down to the type of machine used.

There are many brands of machines, but we will focus on the two types of machines available for small-batch production. Each type operates in its own distinct way.

PACOJET Pacojet machines work by pouring the ice cream, sorbet, sherbet, or gelato base into special beakers that are placed in a freezer set to −20°C / −4°F for 24 hours. The time is considerably reduced if using a blast freezer that can drop to −38°C / −36°F. Once the product is completely frozen, the beaker is then attached to the Pacojet, which is fitted with a spiral blade that literally "shaves" the frozen base into very thin sheets about 2 microns thick at a speed of 2000 rpm. When the beaker is attached and the machine is turned on, the blade will drill down


The blade and beaker of a Pacoject

into the frozen base and then come back up. Each portion or scoop takes around 20 seconds to make. An entire beaker takes 4 minutes to process. It can be programmed to produce however many portions are needed at a time, up to 12 per beaker. The final temperature of the frozen base is –12°C / 10°F to –15°C / 5°F. At this point it is reserved, frozen, for service. The company makes only one type of machine, but there are a total of four variations on it. All four machines are the same; the only difference is the kind of voltage required to use them. A machine that works in the United States will not work in Europe, and vice versa.

According to the president of Pacojet AG, the motor, though rated at 1,000-watt power, has the capacity to output over 1600 watts, after which it cuts out. This is what enables the Pacojet to pacotize virtually anything that is deep-frozen, at a constant rpm and downward penetration speed, regardless of hardness. The primary reason for the quality in consistency and texture is a combination of constant rpm, constant shaft progression, and blade geometry. If one of the three were out of synch or faulty, the end result would be compromised.

PROS

- Cuts the churning time to a fraction of what a regular machine takes to freeze a quart of product (20 seconds for one portion, 4 minutes for a whole beaker). Keep in mind, however, that this machine doesn't "churn," it "shaves."
- Finished item has a very smooth consistency, is easy to scoop, and has an excellent texture and mouth feel.
- Because of the way it shaves the frozen product, it is not necessary to use any kind of stabilizer or emulsifier to obtain a smoother, more freezer-resistant product. In other words, its ice crystals remain small and are not prone to increase in size. This will have a direct effect on maintaining a consistent texture for hours at a time.
- The amount of sugar in a sorbet can be significantly reduced and the result will still be smooth. In other machines, if there is not enough sugar in a sorbet base it will be icy, and if there is too much sugar it will be too soft. It is possible to use the same amount of sugar and still obtain positive results. This machine is ideal for savory ice creams and sorbets, because sugar content will not determine the size of the ice crystals; only the machine's thorough blending will determine that.
- It is reasonably priced compared to other small-batch ice cream machines.
- The beakers can be filled and kept frozen for long periods of time, and processed when needed.
- You decide how many portions to "shave" by pressing a button. You can process one portion or up to the entire beaker.
- It takes up very little space. Its dimensions are 20 cm / 8 inches wide by 36 cm / 15 inches deep by 50 cm / 20 inches tall, and it weighs only 14 kg / 30 lb.
- The cleaning process is just as fast as the pacotizing process.
- It is not used exclusively for frozen desserts. It can also be used for pâtés, terrines, mousses, and for grinding spices, nuts, etc., through its blending action.

CONS

- If the machine should break down, there aren't many technicians who repair Pacojets. If the machine has to be sent away for repair, it often requires at least a month to get back. For this reason it is a good idea to have a second Pacojet as backup. One of the main reasons a machine will need repair is because of improper handling and misuse. It needs to be cleaned properly on a consistent basis. The "drill" needs to be thoroughly cleaned at least once a day for sanitary purposes, as well as to prevent any product from accumulating on it that will prevent it from drilling properly through the rock-hard product.
- Should there be any product that has already been shaved left in the beaker, it can be frozen to –20°C / –4°F to shave again, but the final result is not very good. The second shaving incorporates too much air into the product, which makes it hard to scoop, and in turn makes the scoops not look very good. The original optimal consistency is not there anymore.
- There are many small components that tend to get lost very easily.
- The spiral blade needs to be sharpened at least once a year.
- The Pacojet does not pasteurize the base, which is a key step in frozen dessert production. For products that will be pacotized, pasteurization should take place during the cooking process.
- It is mostly convenient for small restaurants and hotels because of the quantities that can be made at one time. I would discourage the use of a Pacojet for operations with more than 120 seats because the amount of beakers that have to be frozen and pacotized ahead of time would take up too much freezer space. In many establishments, space is a luxury.

In this book, all ice creams, sorbets, and sherbets that do not contain any stabilizers and/or emulsifiers, as well as all savory items, will be processed using a Pacojet machine. They can also be churned in a batch freezer, but the Pacojet will produce frozen desserts with better texture and mouth feel. Although gelatos can be put through the Pacojet, it is better to churn them in a batch ice cream maker, in which it is easier to control the amount of air that is incorporated into the product (see gelato on page 53 and overrun on page 63).

BATCH FREEZER MACHINES

Batch freezer machines operate much differently than the Pacojet. In these types of freezers, the ice cream, gelato, sorbet, or sherbet base has to be simultaneously frozen and whipped. The base is poured into a barrel surrounded by pipes containing water and Freon R-12 or R-22 gas, which freeze the barrel from the outside. The interior of the barrel should be constructed of stainless steel or equally corrosion-resistant metal.

When the machine is turned on, a blade spins inside the barrel at a constant speed. This whips the mixture, which introduces air bubbles into the

Batch freezer blade

base as it freezes, trapping them to give it its characteristic texture. The faster the blade spins, the smaller the resulting bubbles and ice crystals. Machines that spin too fast need to be continuously supervised to avoid overwhipping the base, which will add too much air and freeze the product too much. Conversely, machines that spin too slowly, like most home units, will produce large crystals and will introduce very little air into the product. When it spins, the blade needs to come into direct contact with the surface of the barrel so the blade will scrape off the ice crystals that form there before they get too large. The blade will mix the crystals into the remainder of the base through its spinning motion, thus creating even-size crystals and even freezing. The blade needs to be of a nonreactive material, such as heavy-duty plastic, so as to not cause an unwanted chemical reaction that could be a health hazard.

Some brands of batch freezers are Coldelite (or Carpigiani), Taylor, and Emery Thompson. Information about finding batch freezers can be found in the Resources listed on page 425.

PROS

- Currently there are batch freezers that range in capacity from as little as 1.5 liters (1.5 quarts approximately) to 41 liters (44 quarts approximately) per batch. Some models can mix the base and homogenize, pasteurize, and freeze it in a matter of minutes, making the entire process quick and easy.
- Churning time can be monitored and controlled with relative accuracy. This comes in handy when a certain amount of air incorporation is desired. For example, churning gelato will be much quicker than churning ice cream, because gelato requires a smaller percentage of overrun (see page 63).
- Newer models can stop the freezing process the moment the frozen product is being extracted, so that the first portion of the product that comes out is the same consistency as the last. It used to be that the machine would continue to freeze even after the freezing element was turned off. As the product was being extracted and there was less and less of it left in the barrel, it would continue to freeze as the blade spun. This created a finished product that was unevenly frozen.

CONS

- In many recipes it is necessary to add stabilizers and emulsifiers to produce an item that will have a consistent texture once the product is hardened (hardening is the step after churning, which takes place in the freezer) and stored in a freezer during service.
- The recuperation time of the freezing element can be up to 15 minutes between batches, depending on the capacity of the machine.
- The freezing element is the component that breaks down most often. This can be fixed only by a qualified technician.

ANTI-GRIDDLES The anti-griddle is one of the most recent innovations that have had a definitive impact on frozen desserts (and other foods) as we know them. It was invented by Philip Preston, the president of PolyScience, an industrial lab-equipment manufacturer, in 2004 when Grant Achatz, the chef at Alinea in Chicago, came to him with the idea of an instant-freezing device. What it does is almost instantly freeze a liquid into a solid or semisolid form, practically on contact with the frozen surface. The "griddle," which is the surface the liquids are poured onto, measures 9 by 15 inches/23 by 38 cm, and it drops to temperatures as low as –34.4°C / –30°F, which is almost as cold as an average blast freezer. Some people believe that it freezes too hard. While most frozen desserts are kept at –10°C / 14°F for an ideal texture, –34.4°C / –30°F makes for a very hard product that can be described as crunchy.

Some of the liquids that can be "anti-griddled" include, but are not limited to, curds, custards, mousses, and thickened juices. Some of the most favorable results are from foams dispensed from an iSi Thermo Whip, which adds an incredible amount of air bubbles to a liquid, making the final frozen dessert more palatable.

An anti-griddle can give a whole new meaning to what a semifreddo is, since it is possible to freeze only one side of the liquid (the one in contact with the griddle), leaving most of the exposed surface in its liquid form. The idea is that the longer you leave a liquid on the griddle, the harder it will freeze and the greater the amount of it will freeze. It is also possible to flip the freezing liquid over once the surface that is in contact with the griddle hardens, and obtain a liquid that is frozen on the outside but still liquid in the middle if the freezing is timed correctly. Many users recommend spraying the griddle's surface with vegetable oil spray to ensure that the frozen item comes off easily.

Instant freezing used to only be possible with liquid nitrogen, which is a technique that some restaurants use to make instant sorbet. While it is entertaining to see instant sorbet made right before your eyes, with the dramatic effect of the cloud that emanates from the nitrogen, it is certainly dangerous to handle and store liquid nitrogen, and the results are wildly inconsistent.

Storage Units

The ideal holding temperature for frozen desserts is –10°C / 14°F. A freezer's ability to freeze at that temperature or lower isn't the only requirement demanded from it. During a busy service, the freezer door will be opened and shut many times, trapping the outside temperature with it. The compressor should be powerful enough to restore the temperature to –10°C / 14°F quickly so as to not affect the frozen product. Stabilizers cannot do the work alone to prevent heat shock. Proper air circulation is another contributing factor to the quality of the freezer. The better the air flow, the more consistent the temperature will be, even with constant opening and closing of the freezer door.

Meticulous care and maintenance of your freezer will help to extend the life of your investment. Freezers will accumulate condensation that will eventually freeze into "snowy" ice chunks if they aren't scraped and cleaned on a regular basis. These ice chunks tend to accumulate on the rim between the door and the inside of the freezer, and as they get larger they interfere with the seal that keeps the door tightly shut. Cleaning will also contribute to a freezer that is in superior condition. More often than not, there will be residue left on surfaces during scooping and extracting that will only re-freeze and create an unsanitary environment for your product. It is a good habit to defrost freezers once a week after service to let all the accumulated ice thaw, and perform a deep cleaning early the next day. It is not a good idea to scrape the ice off and call it a day. It is possible to puncture the interior surface if using a sharp object to scrape off the ice. This will damage the interior machinery of the freezer, causing it to eventually malfunction. It is never a good time to have your freezer break down right before service.

There are a variety of freezers available. The following are the most widely used in restaurants and hotels; the size and capacity required depend on the needs of the establishment.

BLAST FREEZERS Depending on the model, blast freezers can drop down to –38°C / –36°F. This type of freezer is not recommended for storing ice cream, gelato, sherbet, or sorbet, because at such low temperatures even the airiest product will harden too much. However, they are ideal for ices. Making a granité (see page 70) in a regular freezer can be time-consuming (close to 4 hours from beginning to end). In a blast freezer, though, the base will go from liquid to ice very quickly (30 to 40 minutes), but scraping has to be done more frequently to prevent large ice crystals from forming. They are also ideal for ice pops and other types of ices that do not require the addition of air.

PROS

- Outstanding freezing speed.

The interior of a blast freezer

CONS

- It takes up a lot of room. Most kitchens, let alone pastry shops, do not have the luxury of the space required for a blast freezer.
- They are very loud. A compressor as powerful as this one is bound to make its presence known.
- They are expensive. Models range in price but can run into the tens of thousands of dollars.

DRAWER FREEZERS

Perhaps the most convenient freezer for service, a drawer freezer is able to hold the same-size pans that rest on the drawer's rails. The drawer slides open and closed, which makes the frozen product easily accessible. How many pans the freezer can hold and their size depend on the freezer. How much product is stored in them depends of the needs of the establishment and the extent of the pastry chef's menu. It is recommended that these pans be made of stainless steel and be covered with a lid, preferably a see-through Lexan plastic lid so that the product they contain is visible. Metal retains temperature better than other food-safe storage, like plastic, and is highly recommended for all machine-churned frozen desserts and ices. Pacojet beakers are small enough that they can be placed inside most pans and held there for service.

PROS

- Outstanding freezing speed.

CONS

- This freezer will only properly hold a product that is in a pan that is meant for its dimensions. Items cannot be stacked or stored in anything else. This is inconvenient when space is an issue. It could be said that this is not an all-purpose freezer.
- Not recommended for aerated still-frozen desserts, unless they can be placed in a pan in a single layer, because stacking can damage their integrity. However, this situation would use up a lot of space.

ALL-PURPOSE/STANDING FREEZERS

Standing freezers differ from drawer freezers in that they can be considered all-purpose freezers. This is convenient because they can be used for more than just frozen desserts, but if not consistently cared for, cleaned, and organized, they can turn into a mess.

Drawer freezer with ice creams tightly wrapped before service

Ideally, standing freezers will have proper shelving and sufficient space between shelves to store machine-churned frozen desserts and ices in adequate pans. Keep these pans on a sheet pan that can be slid in and out of the freezer to access every pan easily. Aerated frozen desserts should be placed on a parchment paper–lined sheet pan in a single layer. Pacojet beakers should be placed on sheet pans as well. It is recommended to label all Pacojet beakers and pans on the front before they are frozen or filled with an ice cream, gelato, sherbet, sorbet, or ice. This is to easily and quickly identify their contents, but also because labeling a frozen container is impossible because nothing will stick to it.

Standing freezers should not be confused with chest freezers. Standing freezers open from side to side (horizontally) and their door(s) close easily, while chest freezers open from bottom to top (vertically). Chest freezers are an inconvenience because of the way in which the frozen products are accessed. They usually have a large see-through lid (or door) that needs to be kept open with one hand (or leaning on a wall) while the frozen product is taken out with the other hand. Ideally all the pans will be placed in a single layer and not stacked, but if this is the case the depth of the freezer negates easy access, as there is a lot of bending over involved. Since most people in a busy service need two or maybe three frozen products at one time to fulfill an order, the door is often left open for a longer period of time than ideal so that the contents can be taken out quickly and with the least amount of effort. Who has time to worry about a door falling on your head when you have a dining room full of people waiting for dessert?

Roll-top freezers are built similarly to chest freezers, but have sliding doors that solve the problem of the lid door but do not remedy the difficulty of accessing single-layered pans. However, they are very reasonably priced freezers.

PROS

- The biggest benefit chest freezers have is that they are usually the most economical option of all freezers.
- Stand freezers are valuable for their versatility.

CONS

- An all-purpose freezer can result in an overcrowded space where products aren't easily accessible. Organization is key with these types of freezers.

DISPLAY FREEZERS As the name indicates, display freezers are intended for product display in a retail operation. Frozen items are placed in pans and are accessible through a sliding door or a hinged door. The display area should be made of glass and not plastic. The biggest concern with these types of freezers is condensation. The door is opened and closed many times, and this can easily form condensation in the front display. Good display freezers are built to prevent condensation by proper air circulation and compressors that will quickly compensate for any temperature changes.

PROS

- Product can be displayed *and* stored in the same place, therefore saving space and the expense of another freezer for only storage.

CONS

- Cleanliness must be the top priority because it is the image of the establishment that is at stake if the freezer is not clean. Customers will see any kind of spot or fogging of the glass as a negative sign, and rightfully so. If they can't see the product, why are they going to want it, let alone pay for it? This is not to say that cleanliness is not as important in the back of the house. It is equally important, but mostly for sanitary reasons, not visual impressions.

Serving Equipment

Once the product is ready for service, it is necessary to have the right tools to serve it. The following tools are described along with a few helpful tips.

SPOONS Spoons are used to scoop quenelles. Scooping flawless quenelles takes a lot of practice and patience and is the product of an experienced hand. Many pastry cooks and chefs opt for a two-spoon quenelle, where two spoons are used to shape it. While this method is certainly easier, it never looks as clean as a single-spoon quenelle, which gives the frozen product a smooth, seamless egg-like shape. The size of the spoon depends on the desired amount that will be served, but the shape of the spoon is rather important. It should be deep enough to scoop a nicely oval-shaped quenelle. Flat spoons will not produce a pronounced oval shape. Most ice creams, gelatos, sherbets, and sorbets in this book are scooped into a quenelle shape. Quenelles just look better because they are more refined than a scooped ball and are a display of the pastry cook's and pastry chef's finesse and skill. They show an attention to detail and care for your products, the pastry shop, and customers.

The shape of the bowl of a quenelle spoon

To scoop a quenelle, dip the spoon in clean hot water. Tap it dry and scoop from the farthest end of the container toward you in a single motion. When the quenelle comes up to the side of the container, gently lift it up and away from the container. The spoon at this point will have gotten cold and will not release the quenelle smoothly. Rub the back of the spoon on the palm of your hand to warm it up. Immediately release it from the spoon in a gentle downward motion onto the plate. It should slide right off.

Begin forming the quenelle by scooping from the farthest end of the container toward you in a single motion.

Rub the back of the spoon on the palm of your hand to warm it up and release the quenelle.

Deposit the quenelle onto a base, such as these cocoa nibs, to anchor it.

Note: Whenever dipping a spoon or scoop into hot water, make sure the water is clean and hot (above 62°C / 145°F) and that it is circulating.

Spoons are also used for scooping granités, but a quenelle shape is not a practical shape for granités. Since the spoon needs to be warmed up, it can melt the delicate ice crystals that form the granité. A cold, clean spoon will do the job.

SCOOPS Scoops are a more practical option for scooping frozen desserts. Scoops come in a variety of shapes, like square, pyramid, heart, etc. There are oval scoops that look like quenelles, but that's cheating! There are several different kinds of scoops:

Sweep-blade scoop

Sweep-blade mechanisms with a spring return in the handle are perhaps the most common type of scoop. They are made of stainless steel and come in different sizes. The number that specifies the size of the scoop indicates the number of scoops that can be made from a liter of product.

Spring-loaded thumb-release scoop

The ice cream is "pushed" out of the scoop by pressing a spring-release lever that is located on the handle and is connected to a mechanism at the center of the scoop. The finished scoops look slightly smoother than those produced by the sweep-blade mechanism scoop.

LEFT: Sweep-blade scoop; RIGHT: Single-piece scoop

Single-piece scoop

If used correctly, they can produce seamless spheres or ovals. Although it takes practice to get to that point, the results are much more refined than the previous two scoops.

Ice cream spade or gelato scoop

It looks like a wide offset spatula and is used to pack frozen desserts into cones or "to go" containers. Not recommended for plating. Its design permits fitting more product into a container than a scoop, because scoops will leave empty spaces between spheres.

PLATES AND VESSELS This refers to any surface onto which a frozen dessert will be placed to be served. It can be any surface, as long as the following is considered:

- It has to be cold enough to not melt the product on its way from the kitchen to the table. It should not be kept refrigerated or frozen, because this will cause an unsightly condensation on the plate. If the vessel is deep-frozen in a blast freezer, condensation will take longer to occur, but timing is of the essence. The consumer must be informed of this, because a wet finger or hand will stick to its surface. (Be careful, cold plate . . . *very* cold plate.)
- It must be food safe, meaning that it won't be a health hazard; for example, aluminum bowls or copper plates should not be used.
- It should contain the frozen product. Desserts are usually eaten with one utensil (spoon or fork). Either the vessel should have a concave surface or the product should be served with other items that will keep the consumer from chasing his or her ice cream around the plate. The surface can be flat, but the frozen dessert has to stay in place or be easy enough to spoon off the plate with little or no work. Desserts should be a pleasure, not a chore.

Molding Equipment

Frozen desserts can be formed into almost any shape, but we will focus on entremets and their internal components, known as "inserts." Entremets are also known as cakes, and they are meant to serve more than one person. Individual versions of entremets are also possible and make for a stunning dessert for which the pastry chefs can put their technique and experience to the test.

The shape of the entremets is only limited by the pastry chef's imagination, but we will focus on the basics.

- Materials for molds include stainless steel, fleximolds, and heavy-duty plastic. Stainless steel is the ideal material, since it retains temperatures for longer periods of time. For best results, stainless steel molds should be kept frozen before the frozen product is poured into them.
- Shapes range from simple frames and domes to more elaborate designs. Choosing the ideal shape comes down to how cleanly the product will come out of the mold, since air pockets are a common problem. These air pockets are caused by crevices, usually found in some of the more intricate molds, where it is difficult to evenly fill the mold.

Assembling a frozen entremet takes much more skill and precision than assembling regular entremets. Time is of the essence because meltdown is one of the biggest problems. Being prepared is the only way to ensure a successful result. For more technical information on making, assembling, unmolding, finishing, holding, storing, and serving entremets, see chapter 7, page 101.

Sanitation

One of the pastry chef's responsibilities is to ensure that not only is the food safe for the consumer, but also that all the tools, equipment, and machinery used to prepare food are clean and sanitary. If you have ever experienced any kind of food poisoning, you know how unpleasant it can be.

The following information, if used properly, will prevent any kind of food poisoning from occurring:

- Clean food-contact surfaces. This applies to tools, equipment, work surfaces, and machinery (see next page for cleaning batch freezers):
    1. Rinse and remove excessive soil from the surface with hot water.
    2. Wash and scrub the surface with a scrub brush, using detergent (or soap) with hot water (at 43.3°C / 110°F or higher). The ratio of detergent or soap to water depends on the manufacturer. Follow instructions carefully.
    3. Rinse the surface with clean hot water (at 43.3 C°/110°F or hotter).
    4. Sanitize the surface. Flood the surface with a sanitizer solution that is 23.9°C / 75°F to 37.8°C / 100°F.
- Sanitizer solutions should be made fresh daily, otherwise their sanitizing effect will weaken with time.
- Sanitized items should be left to air-dry.
- Tools, Pacojet components, and batch freezer removable parts can be submerged in the sanitizer solution and then left to air-dry.
- Detergents should never be combined with sanitizers, because sanitizers will decrease the cleaning effects of detergents and on some occasions can produce toxic gases.

The following is a chart for the different kinds of sanitizing solution concentrations available:

Sanitizing Solution Concentrations

SANITIZER	USAGE: SANITIZER IMMERSION (75°F); (1 MINUTE); PPM*	USAGE: SURFACE PPM	USAGE: MAXIMUM PPM
Chlorine	50 (or 1 tsp bleach per gallon of water)	50	50
Iodine	12.5	12.5	12.5
Quaternary ammonium compounds (a.k.a. quats)	200 to 400	200–400	200–4,000

*ppm: parts per million

When preparing sanitizing solution, the water temperature must be more than 23.9°C / 75°F and less than 48.9°C / 120°F. Commercial bleach used for preparing chlorine solutions should not be more than 6 months old. All sanitizing solutions must be carefully measured. Excessive amounts can be a health hazard.

The procedure for cleaning batch freezers is as follows:

1. Pour hot water (43.3 C°/110°F) through the machine's intake. Turn the machine on without turning on the compressor. Let it run for two minutes, stop the machine, and drain the water out. Repeat this operation until the water comes out clear.
2. Pour a detergent solution through the machine's intake. Turn the machine on without turning on the compressor. Let it run for two minutes, stop the machine, and drain the water out.
3. Rinse with hot water until the water comes out free of suds.
4. Pour a sanitizing solution through the machine's intake. Turn the machine on without turning on the compressor. Let it run for two minutes. Drain the liquid out. Take all of the removable parts off (rubber seals, blade, door, etc.) and clean as you would all tools and equipment (see page 46). Let the interior of the machine and its components air-dry, then reassemble the machine.

This procedure should be performed after all frozen desserts have been churned for the day. It is not necessary to do so every time a base is churned unless there will be a significant time lapse between churnings (over four hours, because the machine is presumably at room temperature—the danger zone that is between 5°C / 41°F and 60°C / 140°F—and bacteria will multiply dramatically during this period of time).

This process was developed by Louis Pasteur, who observed that wine and beer spoilage could be prevented by heating them for a few minutes to 50°C / 122°F to 60°C / 140°F. This procedure can be done with a variety of foods, from dairy products to fruit juices. Dairy products represent the most widespread use of this method, where the presence of *Rickettsia Coxiella burnetii,* a pathogen that is highly resistant to heat, is inactivated. The main purpose of pasteurizing is twofold: microorganism destruction that will result in an extended shelf life.

Pasteurization

There are many methods for pasteurizing, but they all focus on time and temperature. A pasteurizer is a rare sight in many restaurants and hotels due to its relatively high cost. Pasteurizers range in shape and size (for small-batch production, they range from 8 liters up to 130 liters), but mostly they look like a stainless steel cube with a lid where the base is poured in and a spout where the base is poured out once it has been pasteurized. Inside the machine is a barrel and a blade or a paddle. The barrel is surrounded by a heating element (and in some machines, a cooling element to bring the base down to food-safe temperatures). They have a temperature control and a timer, which can be set as desired. Always make sure to observe the "time and temperature," otherwise the base will not be properly pasteurized: underpasteurized bases will still contain pathogenic bacteria, and overpasteurizing will mean that the base got too hot, to the point where it might be overcooked (proteins will coagulate). The heating element will destroy the bacteria as the blades spin. Some machines can pasteurize up to 1 liter / 1.04 qt in 2 minutes, which is quite fast.

The pasteurizer will also homogenize the base, but only after it has been pasteurized and there are no live pathogens present. Pasteurizing and homogenizing can be done by hand. It is a little more work and it takes more time, but it is certainly more economical. Pasteurizers are more commonly used for very high volume production, but if you can afford one you will reduce production time significantly.

There are batch freezers for small-batch production that can do most of the work for you, from mixing the base to pasteurizing, homogenizing, and churning (see batch freezers, page 39). This is all well and good, but one of the most important steps in quality ice cream making is the ageing process (4 to 24 hours after the base has been made, pasteurized, and homogenized), which this type of machine encourages you to bypass completely, since the homogenizer is located directly above the batch freezer intake. You'd have to pour your base out, age it under refrigeration, and then pour it back into the batch freezer if you were inclined to do the right thing (which you should!) and not take the easy shortcut.

See Chapter 4 for more on the pasteurization of dairy-based frozen desserts.

BACTERIA, VIRUSES, AND PARASITES AND FOOD-BORNE ILLNESSES Salmonella is by far the most common bacteria found in frozen desserts, particularly egg-based ice creams and gelatos in which the eggs were mishandled at some point during production (cross contamination, or they were not heated above the danger zone during cooking).

The following is a list of bacteria, viruses, and parasites (and their most common sources found in ingredients used to make frozen desserts) that can live and thrive in frozen desserts in their liquid state and can remain alive even through freezing. Sanitary environments and practices will prevent their reproduction, propagation, and food contamination.

Remember: sanitation is not optional.

Common Bacteria, Viruses, and Parasites

BACTERIUM	FOOD-BORNE ILLNESS	COMMON SOURCES THAT CAN BE FOUND IN DIFFERENT VARIETIES OF FROZEN DESSERTS
Salmonella spp.	Salmonellosis	Eggs
Shigella	Shigellosis	Milk and dairy products
Staphylococcus aureus	Staphylococcal gastroenteritis	Milk and dairy products
Bacillus cereus	Bacillus cereus gastroenteritis	Milk and dairy products
Campylobacter jejuni	Campylobacteriosis	Nonchlorinated water
Shiga toxin producing E. coli	Hemorrhagic colitis	Contaminated water
Yersinia enterocolitica	Yersiniosis	Contaminated pasteurized milk; nonchlorinated water
VIRUS		
Hepatovirus or hepatitis A virus	Hepatitis A	Fruit and fruit juices; milk and milk products; vegetables
Norovirus	Norovirus gastroenteritis	Contaminated raspberries; contaminated well water
Rotavirus	Rotavirus gastroenteritis	Fruit; contaminated water
PARASITE		
Giardia duodenalis	Giardiasis	Fruits and vegetables washed with contaminated water
Toxoplasmosis gondii	Toxoplasmosis	Contaminated water
Cryptosporidium parvum	Intestinal cryptosporodiosis	Water; milk
Cyclospora cayetanensis	Cyclosporiasis	Water

chapter four Dairy-Based Frozen Desserts

Machine-Churned or Pacotized

IT IS IMPORTANT TO UNDERSTAND THAT AN ICE CREAM MADE IN A FACTORY that manufactures thousands of gallons a day is not the same product as that of a small operation. It is similar in nature and ingredients, but there are differences that make small-batch-production ice cream unique, and ultimately better, but with a significantly shorter freezer shelf life. While the USDA loosely regulates industrial manufacture by providing guidelines as to what constitutes a certain product (minimum and maximum fat content, overrun, etc.), there is no government regulation for small-batch production. In this chapter, all of the categories for dairy-based frozen desserts are defined and explained, as well as the different methods and machines that can be used to manufacture them.

According to the USDA, the total production of all types of frozen desserts (according to their definition of what a frozen dessert is) at publication time was about 1.6 billion gallons a year, or roughly 21.5 quarts per person, assuming that all of the ice cream produced was consumed. The United States is the largest consumer of frozen desserts in the world. Close to 94 percent of all households consumed ice cream or other frozen desserts during 2004, with vanilla ice cream being the most popular item (29 percent) and chocolate ice cream coming in a distant second (8.9 percent). This amount reflects commercially produced frozen desserts, meaning it does not include small-batch production in restaurants and hotels. Still, these astounding numbers reflect the predilection that this country has for frozen desserts.

Let's begin with what the USDA considers frozen desserts so that you can understand how different their interpretation is from the one provided in this book, since the USDA definitions apply mostly to commercial production. Their definitions are very loose and are focused on dairy-based products. As you will see in the next chapter, non-dairy frozen desserts aren't even categorized or defined by the USDA. The following are the different USDA categories of frozen desserts, along with a brief description of each:

- Ice Cream: Ice cream is made from cream, milk, sweeteners, flavorings, stabilizers, and emulsifiers such as egg yolks. It must contain at least 10 percent milk fat and 20 percent milk solids by weight.
- Frozen Custard (French Ice Cream): Frozen custard, also called French ice cream or New York ice cream, has more egg yolks added to the base than in ice cream. In either case, the machinery employed works essentially the same way as small-batch freezers, but is much larger, and generally these machines do 99 percent of the work, from making the base to packaging.
- Low-Fat Ice Cream: Low-fat ice cream, or ice milk, is made from milk, stabilizers, sweeteners, and flavorings, and contains no more than 3 grams of fat per 4-ounce serving (1 percent of the total weight). Other fat-controlled categories are "reduced fat," which should have at least 25 percent less fat than regular ice cream, or 2 percent of the total weight; "light," with at least 50 percent less fat than regular ice cream; and "fat-free," with less than one-half gram of fat per serving.
- Sherbet: Sherbet, made from milk, fruit or fruit juice, stabilizers, and sweeteners, has about twice as much sweetener as ice cream in order to provide the proper texture. Since fat is in part responsible for smoothness and a pleasant texture, sugar is added to make up for its absence or reduced quantities. Sherbet must have 1 to 2 percent milk fat and 2 to 5 percent milk solids.
- Frozen Yogurt: Frozen yogurts, containing yogurt, sweeteners, and sometimes flavorings, are available in regular and low-fat varieties. These cannot be categorized with low-fat ice cream because of their solids content that relate to the fat percentages listed above. There are no specific standards for frozen yogurt.

Note: The USDA defines frozen desserts not only by the ingredients they should contain, but also by the amount of air that is incorporated. One gallon of frozen (churned) product must weigh at least 4–5 pounds; in other words, that one gallon of finished product can contain a maximum overrun of 53.92 percent (the percentage of air it can contain per gallon maximum).

That's it. No more. These definitions could seem somewhat ambiguous. For example, according to the USDA, ice cream can contain egg yolks as an emulsifier. So, technically, how is this product different from a "frozen custard"? Also, how can it be that there is no standard for frozen

yogurt production? This lack of a standard opens the door for a variety of manufacturing differences among frozen yogurts. And where would the semifreddi, frozen soufflés, frozen parfaits, and frozen mousses in Chapter 7 fit in? In the following text and the subsequent chapters, you will find thorough definitions and the correct categorization of frozen desserts that will pertain to small-batch production. It is important to have clear and distinct categories and to respect the terminology so that your customers know exactly what they are getting. If you order an espresso granité, you expect to get what you understand to be a granité and not the chef's interpretation of it. If the chef is interpreting, a name change or at least an indication of interpretation is due (e.g., espresso "granité") so that it is understood that the customer will be getting something other than granité.

Varieties and Definitions

ICE CREAM (a.k.a. "Standard" or "Philadelphia Style") The term *ice cream* is commonly used to refer to almost any dairy-based frozen dessert, yet technically it is its own category. Simply put, an ice cream is an emulsion and then, after churning, is a foam in which the air bubbles are stabilized by freezing a large amount of the liquid around them. How much of the liquid is frozen depends on the sugar content of the base (see sugars, page 15).

In order to be called ice cream, the ice cream base should contain no egg yolks (or it would be a custard-base ice cream), and for this reason it requires the addition of an emulsifier (see emulsifiers, page 22) for optimal results. Remember that emulsifiers have a determining effect on the even dispersion of fat globules throughout the ice cream base in order to produce a smooth product. Without an emulsifier, the texture might be grainy and icy. Ice creams can be made from milk or a combination of milk and heavy cream. Heavy cream is used in smaller amounts than milk (use 2 parts milk to 1 part cream as a rule of thumb). The addition of heavy cream will obviously add fat, which in turn will produce a richer texture, but not necessarily a better one. Heavy cream is not recommended to use alone in ice cream bases because its high fat content will seize and harden while processing in a batch freezer or Pacojet. The result will be a grainy finished product, and that grainy texture is congealed fat (butter).

This type of ice cream is more prevalent in industrial ice cream production, because eggs can raise the cost of production significantly. Custard-base ice creams are more common in small-batch production.

CUSTARD-BASE ICE CREAM

Though similar to ice cream, custard-base ice creams contain egg yolks, which act primarily as an emulsifier but also add flavor. This is the basic distinction between custard-base and eggless ice creams. A custard-base ice cream will have a distinct flavor thanks to the addition of eggs. It is also more stable in the freezer, where it tends to not get as icy and hard as regular ice cream because of the effect that the eggs have on the base.

GELATO The USDA has no standards for gelato. Anyone can make an ice cream and call it gelato. Opinions as to what makes a gelato unique will differ. If you ask an Italian pastry chef what *gelato* means, he will simply reply "ice cream." If you ask a pastry chef in the United States what it means, you will have many different opinions. Some will say that gelato should contain no heavy cream or egg yolks, some will say it should, and they would both be right. In Italy, they make gelato with milk alone; milk and heavy cream; and milk, heavy cream, and eggs. Despite the different opinions, there is one quality that makes it unique and different from ice cream and custard-base ice cream, and that is its "overrun" (see definition on page 63). While most ice creams and custard-base ice creams have an overrun between 40 and 60 percent, the overrun for gelato is 20 percent, which makes

it a denser, more compact product. If you incorporate any more air, it becomes ice cream or custard-base ice cream. Some argue that gelato has significantly less fat. There is little to no truth to that assertion and even if that were true, a spoonful of gelato with 20 percent overrun would have significantly more or the same fat as an ice cream with 45 percent overrun, since there is more product in the spoonful of gelato than there is in the spoonful of ice cream. If there is less air by volume it means that there is more product by volume and therefore more fat. The production of gelato is the same; it is the churning time that varies. With gelato it is shorter and therefore the finished product will have less air incorporated. The flavor is the same but the texture is vastly different.

SHERBET The term *sherbet* has many interpretations as well. The USDA's definition is accurate to a point. Sherbets *can* be made with milk, fruit or fruit juice, stabilizers, and sweeteners. However, the simplest and most accurate definition is that sherbet is an ice containing less than 50 percent dairy in the total liquid, which can be water, fruit purée, or fruit juice, or a combination of these three items. For example, you can make a mascarpone sherbet, as well as a buttermilk sherbet. Sherbet should contain 1 to 2 percent milk fat and 2 to 5 percent milk solids, so the dairy content is very small compared to the remainder of the liquid. It also has about twice the amount of sugar as whole-fat ice cream so that it can form small ice crystals.

In France sherbet simply does not exist, at least not in the way we know it here in the United States. Sherbet seems to be unique to the United States, where often the word *sherbet* is freely and incorrectly interchanged with *sorbet*. Although sherbet is not necessarily the most popular frozen dessert in the United States, some view it as a "healthy" alternative to ice cream. This viewpoint may be somewhat flawed as well; sherbet has less fat but more sugar than regular ice cream.

A NOTE ON FROZEN YOGURT While frozen yogurt is a common item dispensed from soft-serve machines, it is not widely used in the restaurant and hotel industry. A yogurt sherbet would be its ideal replacement because it will have a better consistency and flavor than soft-serve frozen yogurt, which is loaded with air.

Structure

The physical structure of ice cream is complex, and even food chemists will agree that it is not fully comprehended. The overall goal is to incorporate different insoluble materials (fat globules, ice crystals, and air bubbles) into a liquid (milk, for example) at the smallest possible sizes and in the largest numbers possible. However, the ingredients and methods needed to achieve such structure need to be understood. In order to make a high-quality product, the key principle is to develop a recipe that will result in a frozen product that has a balanced structure of ice crystals, air bubbles, and unfrozen solids. All of these elements contribute to not only a palatable product but also one that is stable in a frozen environment.

There are two phases in ice cream: continuous and dispersed. The continuous phase refers to its unfrozen (or liquid) form, which is an emulsion in which there is a suspension of solids in a liquid. This is also referred to as the *base*. Sugar, water, stabilizers, and milk proteins make up the unfrozen (or liquid) solution. The insoluble solids (fat globules) are evenly suspended in the liquid. This liquid forms an emulsion with dispersed fat molecules.

The dispersed phase is a foam that occurs while churning (freezing) the base. It is made up of air bubbles evenly dispersed in the base. Each air bubble is surrounded by a thin layer of milk proteins embedded with fat globules. This milk protein-fat interface between the air bubble and the water is called the *lamella*. The lamella deter-

mines the size and stability of the air bubble. If the air bubbles are smaller and there is a higher lamella-surface-area-to-air-bubble ratio, then the air bubbles are more stable. Fat molecules will enhance the structure of the air bubbles as well because they strengthen the lamella through their emulsified and tightly knit networks.

During the churning process, most of the water freezes out of the liquid contained in the base in the form of ice crystals. This will bring down the freezing temperature of the remaining liquid with the help of the presence of sugar. Remember that one of sugar's properties is to depress freezing temperatures, keeping some amounts of water from completely freezing. Because of this, even in below-freezing temperatures, some water will remain in a liquid state, which will prevent the overall base from becoming a block of solid ice. Type and temperature of the freezer both play a crucial role in the final texture of the ice cream. The faster a base churns, the smaller the ice crystals will be.

A high-quality ice cream is one that has a smooth mouth feel. This is determined by the size, amount, and distribution of ice crystals. This all comes down to structure. Small ice crystals contribute to proper mouth feel, while large crystals produce an unpleasant "iciness." Proper structure will have a significant impact on meltdown. When a frozen ice cream is put in an environment where the temperature is higher than –10°C / 14°F, two things occur: the ice crystals will begin to melt and, as a result, the fat-stabilized foam structure will collapse. The ice crystals that trap the air bubbles will melt and the trapped air will escape. The warmer it is, the faster the meltdown will be. The speed at which meltdown happens is significantly reduced when emulsifiers are added to the ice cream base, especially polysorbate 80 (see emulsifiers, page 22). Be assured that even slight temperature increases will melt the frozen product. It may not be visible, but it is happening. Multiply those small meltdowns by 100 (assuming the frozen product is taken out of the freezer 100 times during service, for example) and you have a significant amount of melted product, which will become visible at this point. The melted portion can re-freeze when returned to the freezer, but it will freeze into larger ice crystals than it originally had, giving it an icy texture.

Manufacture

There are six major steps involved in the manufacture of dairy-based frozen desserts. These steps hold true regardless of the size of production. All of the items in this chapter will have to go through all of these steps in order to produce a quality product.

1. **MAKING THE BASE:** The desired ingredients are scaled out based on formulation, and the base is made according to the appropriate method (see Production Techniques, page 56).
2. **PASTEURIZATION:** In this step, the liquid is heated to a certain temperature for a certain amount of time, which will destroy all pathogenic bacteria. The preferred method for small-batch production is known as HTST (high temperature, short time). The base is heated to 85°C / 185°F, taken off the heat, and then stirred for 2 minutes. This stirring accomplishes three things: it ensures that the base is evenly pasteurized, that the ingredients are homogenized (see page 56) and that certain ingredients, such as stabilizers and proteins, are hydrated. Another form of pasteurizing is performed in batch pasteurizers, which have the same purpose of killing bacteria, but the process is slower since the liquid doesn't get as hot as with the HTST method. In vat pasteurization, the mixture maintains a 65°C / 149°F temperature for 30 minutes. This process is more convenient for industrial production, where larger amounts of liquid will take longer to bring down to safe temperatures and the base spends less time in the danger zone. It is also used for bases with ingredients that are sensitive to higher temperatures (see chapter 3, Pasteurizing, page 48).

3. **HOMOGENIZATION:** A fat emulsion is formed through constant agitation (or stirring) of the mix at pasteurization temperatures, because the fat globules break up more readily and do not tend to clump at that point. Clumps of fat will cause a thick base, and thinner bases incorporate air better and form smaller, more uniform air bubbles. This in turn will make for a smoother, more stable, and more heat-shock-resistant product.

4. **AGEING:** After the product has been homogenized, strained, and cooled down over an ice bath to 4°C / 39°F, it needs time to "age." During this time the proteins and stabilizers get fully hydrated and the fat cools down and crystallizes. Protein and emulsifier networks are developed during this time. Ageing or "maturing" will improve the whipping properties of the base, which in turn will make for a smooth frozen product with a high tolerance to heat shock. Ageing time ranges from 4 hours minimum to 24 hours maximum. If there is a flavor being steeped, this time will also allow it to infuse a stronger flavor into the base.

5. **CHURNING OR FREEZING:** This is the process in which the base's water is partially frozen and air is whipped into the mix. This particular process takes place in a batch freezer. With the Pacojet, the base is frozen solid, then shaved in the machine, where minuscule air bubbles are formed.

6. **HARDENING:** When, for example, an ice cream is extracted from a batch freezer, it is frozen, but not frozen enough to serve. The consistency is too soft to be scooped, since it is around –4°C / 25°F. It needs to reach –10°C / 14°F or a maximum of –12°C / 10.4°F to make it hard enough to scoop easily, but still have it retain a smooth texture. The time it takes for a frozen product to reach this ideal temperature depends on the freezer. A good compressor equals quick hardening. A blast freezer set to –30°C / –22°F will harden 2 liters (2 quarts approximately) of finished product in 5 minutes. A conventional freezer can take up to 2 hours. Do not set the blast freezer any lower than –30°C / –22°F, because no matter how well you made your base and no mater what sort of stabilizers and emulsifiers you have added to it, it will become too hard to scoop.

Production Techniques (Methods)

There are two categories of methods used to make dairy-based frozen desserts that will be machined churned or pacotized. Each technique within the categories has its purpose and place in the pastry kitchen. The methods that are employed depend on the balance of ingredients in a recipe, which will then determine the best machine to use. Not every establishment will have the luxury of having a batch freezer *and* a Pacojet, therefore it is important to understand the methods thoroughly before deciding on the most convenient one that suits a particular operation.

Note: Always use the right size equipment. You want to have enough room in your saucepot, bowl, and cooling-off container to work comfortably and allow for the ingredients to flow freely.

CLASSIC METHODS

There are two classic methods that can be used to make ice cream, custard-base ice cream, gelato, and sherbet. However, before deciding which one to use, you need to determine both whether the recipe is suited to a classic method and your personal preferences. The biggest determining factor is whether the base contains stabilizers and/or non-egg/powdered emulsifiers and whether you want to use these ingredients. Do you like or dislike the effect that stabilizers and non-egg/powdered emulsifiers have on a finished product? The classic methods are not recommended for bases that contain them because the methods do not hydrate powdered stabilizers and non-egg/powdered emulsifiers as thoroughly as the Modern Method (see page 59) does, and therefore they do not work to their full potential.

It is highly recommended that the bases produced with the classic methods be pacotized for best results (see Pacojet, page 37, for detailed information). Bases that do not contain stabilizers and non-egg/powdered emulsifiers are prone to have more defects than those that do. These defects or weaknesses in the base can be corrected and eliminated through pacotizing because of the way the machine works. A batch freezer can also be used for products made with this method with good results, but they need to be cared for thoroughly during service because they are more susceptible to suffering in quality and to melting because of the lack of stabilizers and emulsifiers. Don't forget that when you pacotize items made with this method, you should do so soon before and throughout service to maintain an ideal smooth texture; you must avoid pacotizing all of your product before service because it defeats the purpose of pacotizing. Ultimately, what will determine which classic method to use is simply whether the recipe has eggs or not.

Eggless Method

1. To begin the eggless method, combine all of the ingredients in a saucepot or other adequately sized cooking vessel.
2. Place the saucepot over high heat and whisk continuously until the mixture reaches 85°C / 185°F. Turn the heat down to medium-low.
3. Continue whisking the base for 2 more minutes in order to homogenize it. It is not necessary to bring the base up to a boil because the purpose of this method is to combine all the ingredients properly and to dissolve all of the solids, which consist mainly of sugar. Since these bases lack eggs, nonfat dry milk is often added to bind the excess liquid in the mixture in order to prevent the formation of large ice crystals.
4. It is a good practice to strain the base through a fine-mesh strainer after it reaches 85°C / 185°F to filter out any unwanted solids (such as infused flavors, like vanilla pods).
5. Immediately after straining, place the base over an ice bath to cool down (see ice baths, page 36).

Note: Although there are only custard-based recipes in this book, it is important to understand how to produce all types of ice cream.

Custard Method

This method is solely used for recipes that contain eggs and no stabilizers or non-egg/powdered emulsifiers. Don't forget that egg yolks are the simplest and most common form of emulsifier. They have been used for many years and yield excellent results, but care must be taken not to overcook the base, which will result in over-coagulated eggs (chunky-coarse texture), but also not to undercook the base, since eggs can be a potentially hazardous food if undercooked.

1. Place milk or milk and heavy cream mixture in a saucepot along with half the sugar. If there are any flavors that need to be steeped, such as vanilla pods, this is when they are added. (For specific instructions on how to incorporate other flavors, see "Flavors," page 25).
2. Place the saucepot over high heat and stir for 1 minute to dissolve some, but not all, of the sugar. The undissolved sugar will settle to the bottom of the saucepot to prevent the milk and heavy cream from scorching.
3. While this mix comes to a boil, place the egg yolks and the remainder of the sugar in a bowl. Whisk until it becomes a uniform mass.
4. Once the liquid comes to a boil, slowly pour half of it into the egg yolk–sugar mix while whisking constantly. This process is called *tempering*. If you added the eggs right into the boiling liquid, the high heat would coagulate them instantly and you would have scrambled eggs. Tempering allows a slow and steady temperature increase in the eggs.
5. Once half of the liquid has been tempered with the egg yolk–sugar mix, pour the contents of the bowl back into the pot while whisking constantly and turn the heat down to medium or medium low.

6. Stir constantly with the whisk until the mixture reaches 77°C / 170°F. This will carry over to 85°C / 185°F, which is the temperature for pasteurization. At this temperature the mixture reaches a consistency called *nappe,* or "coat." The proper nappe consistency occurs when the egg proteins have coagulated enough to be sufficiently thick to coat the back of a wooden spoon. A thermometer is a wiser gauge, though, because it is an almost immediate indicator that the nappe stage has been reached. If you take the time to check if your spoon is coated, you will have to put the whisk down, grab a wooden spoon, dip it, check the *nappe,* and assess, and in the meantime the base, even though you may have turned the heat off, is getting hotter from the residual heat in the pot. This could very well overcook the base that is in direct contact with the bottom of the pot.

7. Turn the heat off and strain the base through a fine-mesh strainer into an appropriate container and place over an ice bath (see ice baths, page 36).

That said . . .

Is the process of tempering eggs really necessary? The answer is no, not in this case. The eggs can be added along with all other basic ingredients (sugar and dairy) from the beginning, when the dairy is cold, and then the liquid is brought up to the nappe stage while stirring constantly. The same principle applies to all egg-based custards. For many years, tempering eggs was thought to be the only way to produce egg-based custards. The reason why this method had its place in the kitchen was because there was a time when the quality of cream and milk was inconsistent, and when heat was applied to them, curdling was a recurring problem. This is yet another step that pastry chefs can let go of…really…it's okay. However, the only downside is that this process can take longer than tempering the eggs into the base.

Temper the egg base by slowly adding the heated dairy to it while whisking constantly.

Cook the egg and dairy mixture until it reaches 77°C / 170°F.

The dairy and egg mixture has reached nappe when it has thickened enough to coat the back of a wooden spoon.

MODERN METHOD This method is used for recipes that contain stabilizers and emulsifiers. The temperature of the liquid as well as the way in which the ingredients are added is crucial in order to obtain a successful product, as you will see below. The resulting base is recommended for batch freezer churning (see batch freezers, page 39), but can also be pacotized. Batch freezers are better suited for this method because the stabilizers and emulsifiers will keep the product at an almost ideal consistency throughout service. Remember that with this method you can churn all of your products early in the morning and they will last you all day in the freezer without a significant effect on quality, while with pacotizing you can churn the product at separate times during service. For the same flavor, you can do it right before service and, depending on how much you sell or how big your establishment is, you pacotize some more beakers when you see that the first beaker you pacotized is close to being finished.

1. Scale all of the ingredients accurately.
2. Mix 10 percent of the sugar with the stabilizer (which can be combined with the emulsifier or emulsifiers). The emulsifiers and stabilizers should not be added to the liquid without mixing them with the sugar, since adding them alone will cause them to clump. These clumps are impossible to break down, and will render the stabilizer / emulsifier properties at the least weaker than they would be in a soluble powder form, if not useless.
3. Place the milk in a pot over high heat.
4. At 25°C / 77°F, add the nonfat dry milk and flavoring. From this point on, whisking should be constant to prevent any of the ingredients from settling to the bottom of the pot.
5. At 35°C / 95°F, pour in and mix all of the remaining sugars until dissolved. This refers to any type of sugar, either in solid (granulated) or liquid form (trimoline, for example). Some recipes might contain egg yolks. If so, they should be whisked in at this temperature (see photo on page 58). (See? It is okay to not temper the eggs after all.)
6. At 45°C / 113°F, add the heavy cream, if using.
7. Before the mixture reaches 50°C / 122°F, add the stabilizer–sugar mix in a slow pouring motion while whisking constantly.
8. Bring the mixture up to 85°C / 185°F, then remove from the heat and cook for 2 more minutes while whisking constantly to pasteurize and homogenize the mixture.
9. Pass the mixture through a fine-mesh strainer and chill down to 4°C / 39°F as quickly as possible using an ice bath (see photo on page 22). If steeping flavors, chill over an ice bath but do not pass through a strainer until just before churning.
10. Let the mixture mature for at least 4 hours, or ideally for 12 hours.
11. Before churning, give the base a good stir.
12. Churn to –4°C / 25°F (see photo on page xxx).
13. Place the churned product in a –10°C / 14°F freezer.
14. Reserve for service.

If using eggs, add them to the dairy base once the sugar has been incorporated and the mixture has reached 35°C / 95°F.

After mixing some of the sugar with the stabilizer, add it slowly to the heated dairy base while whisking constantly.

Pass the cooked mixture through a fine-mesh strainer to remove any impurities or coagulated proteins that would otherwise be noticed in the finished product.

After allowing the base to mature, churn it using the desired machine.

If churning in a batch freezer, the mixture should register at around –4°C / 24°F.

Extrude the finished product from the freezer, if needed, and hold it at –10°C / 14°F.

MATHEMATICAL FORMULATION METHOD Using formulas is instrumental in the creation of recipes. Once you are familiar with how the formulas work, you will understand the basic principles behind recipe development. When starting out with a recipe for the first time, you must draw from experience or at least from having an understanding of the chemistry of all of the different ingredients that are used and how they interact with each other. The use of these formulas applies to the modern method only.

There are maximum and minimum percentages for each ingredient that will help start the formulation process. These percentages are based on weight, not volume. They are shown in the following table.

Maximum and Minimum Ingredient Percentages for Dairy-Based Frozen Desserts Using the Modern Method

	ICE CREAM		CUSTARD-BASE ICE CREAM		SHERBET	
INGREDIENT	MIN	MAX	MIN	MAX	MIN	MAX
Fat (from milk, heavy cream, butter, egg yolks, and other dairy products)	7%	11%	2%	11%	1%	2%
Stabilizers	0.3%	1%	0.3%	1%	0.3%	1%
Emulsifiers	0.2%	0.3%	0.2%	0.3%	0.2%	0.3%
Nonfat solids: Include all solids, even those found in dairy, minus the fat. Remember, solids can be found in egg yolks (50% of the yolk is considered nonfat solids), sweeteners, garnishes, etc. Note: Nonfat solids are used for formulation only; they aren't an individual component of a recipe.	24%	30%	15%	30%	3%	9–10%
Total solids: Includes the above plus all fats, which can be found in all forms of dairy and added ingredients (for example, the fat content in milk chocolate)	31%	41%	25%	41%	20%	23%
Liquid: Refers to any and all ingredients minus all solids, including fats	100% minus solid %	100% minus solid %	100% minus solid %	100% minus solid %	100% minus solid %	100% minus solid %
Sugar (sweetening strength, is the addition of all sugars, solid and liquid): Remember that a variety of sugars can be used in combination.	16%	23%	16%	23%	16%	23%
Egg yolks	N/A	N/A	7%	9%	N/A	N / A
Flavors	2%	10%	2%	10%	2%	10%

Through the following example, it will be easier to understand the formulas and the process itself.

MATHEMATICAL FORMULATION

1. Determine the desired yield for the product base.
2. Calculate the amounts for each percentage from the chart on page 61.
3. Calculate the amount of nonfat dry milk needed.
4. Determine the total weight of nonfat solids and milk.
5. Calculate the weight of the liquid.
6. Calculate the weight of the milk.
7. Calculate the dairy amount distribution.
8. Finalize amounts in the recipe.

To obtain 8000 grams of custard ice cream base, we will start off with a desired percentage, based on the numbers in the chart on page 61. Remember, this is only a mathematical exercise, not a recipe per se.

Total fat: 9% of 8000 g = 720 g

Nonfat solids: 8% of 8000 g = 640 g

Sugars: 17% of 8000 g = 1360 g

Egg yolks: 5% of 8000 g = 400 g

Stabilizer: .4% of 8000 g = 32 g

Total: 39.4% of 8000 g = 3152 g

The next step is to calculate how much milk powder the recipe requires. We first need to determine the total weight of nonfat solids and milk.

720 g (total fat) + 1360 g (sugars) + 400 g (egg yolk) + 32 g (stabilizer) = 2512 g (weight of total solids)

8000 g of total base – 2512 g of total solids = 5488 g of the liquid or "serum"

Then use the following formula in order to calculate the amount of milk powder needed for a formula:

(Required weight of nonfat solids in kilograms) – (weight of the liquid in kilograms x .092**) / (Weight of nonfat solids in 1 kg. skimmed milk powder***) – .092**

** The .092 factor represents the amount of non-fat dairy solids in liquid skim milk (9.2%); the water content is 91% and the fat content is 0.1%.

***The weight of nonfat solids in 1 kg. of skimmed milk powder is always 970 gr. (or .970 kg).

Based on the formula and our numbers, we have the following:

$$\frac{.640 - (5.488 \text{ X } .092^{**})}{.970^{***} - .092^{**}} = \frac{.640 - .504}{.878} = \frac{.136}{.878} = .155 \text{ kg}$$

Therefore, the required amount of powdered milk to add is 155 gr.

Next, calculate the amount of milk required.

1360 g (sugars) + 400 g (egg yolk) + 32 g (stabilizer) + 155 g (powdered milk) = 1947 g

8000 g of total base – 1947 = 6053 g of milk

The recipe so far:

6053 g milk

155 g powdered milk

160 g vanilla beans

1360 g sugars

32 g stabilizer

400 g egg yolks

8000 g without vanilla pods

At this point, the recipe is not quite finished. The amount of fat in the milk and yolks is not enough to obtain a total of 9%. For this we need to reduce the amount of milk and add an amount of heavy cream. This is the formula:

x = g of milk

y = g of heavy cream

Part a) x + y = 6053

Milk contains 3.6% fat and that heavy cream contains 40% fat. Convert these percentages into decimal numbers and continue with the formula this way:

Part b) 0.036x + 0.40y = 588 (this is the amount of fat you need to obtain the total desired amount of 720 g).

y = 6053 – x

Now perform the substitution on Part b)

.036X + .40(6053 – X) = 588 (You have substituted the value from Part a for the "y" in Part b)

.036x + 2421.2 – .40x = 588 (Now we need to combine like terms)

$.036X - .40X = 588 - 2421.2$

$-.364X = -1833.2$ G

$$\frac{-.364X}{-.364} = \frac{-1833.2}{-.364}$$

(Divide the –.364x by –.364 to leave only the x value)

$$x = \frac{-1833.2}{-.364}$$

$x = 5036.26$ g This is the amount of milk the recipe will require.

Therefore:

$y = 6053 - x$, or, $6053 - 5036$ (rounded out) $= 1017$ g.

Final recipe:

5036 g milk
1017 g heavy cream
155 g powdered milk
160 g vanilla beans
1360 g sugars
32 g stabilizer
400 g egg yolks
8000 g without vanilla pods

TROUBLESHOOTING YOUR RECIPE

Let's say that you aren't 100 percent satisfied with the final result. First you must identify what it is that you do not like about it. See page 65 for possible ice cream defects. If any of the defects are present in your finished product and are due to an ingredient and not a mistake in the manufacturing process (making the base, pasteurization, homogenization, ageing, churning, or freezing and hardening), then the recipe can be adjusted. Once you have identified the culprit (too much fat, not enough stabilizer, not enough water, etc.), make adjustments with sensible percentage increases or decreases. For example, if the problem is the amount of stabilizer, make percentage adjustments in decimals (e.g., .3% to .5% or .1%), and do not exceed the recommended percentages (see table, page 80). Remember that you might not get the recipe right on the first try. Trial and error are an integral part of making dairy-based frozen desserts. Consider it a learning experience.

OVERRUN

Overrun is the percentage increase in volume from the liquid base of an ice cream, custard-base ice cream, gelato, sherbet, or sorbet that is a direct result of churning and pacotizing. For example, if you started with 2 liters of raspberry sorbet base and obtained 3 liters after churning, the volume has increased by 50 percent. This number represents the overrun. The 50% increase in volume means that the product now contains 33% air.

Overrun can also be calculated with garnished bases, such as chocolate chips. The formulas on page 61 can be used to determine overrun in a variety of situations, assuming that the equipment used to freeze the product performs consistently.

These two containers started with the same amount of base but were spun for different lengths of time, trapping different amounts of air in each one and leading to variances in overrun. The top base was spun for less time than the bottom base, resulting in less overrun.

- Determining overrun in a frozen ice cream, custard-base ice cream, gelato, sherbet, or sorbet with no garnish:

  (volume of frozen product – volume of base) / volume of base x 100% = % overrun

  EXAMPLE: 1 liter plain ice cream base yields 1.75 liters of frozen ice cream

  (1.75 liter – 1 liter) / 1 liter x 100% = 75% overrun

- Determining overrun in a frozen ice cream, custard-base ice cream, gelato, sherbet, or sorbet with garnish:

  Large solid particles will not be able to incorporate air, therefore they are not considered in the formula. This is best explained with an example:

  4 liters plain ice cream base + 1 liter toasted almonds results in 7 liters of frozen ice cream

  7 liters frozen ice cream – 1 liter toasted almonds = 6 liters of actual frozen ice cream

  Then we proceed with the previous formula:

  (volume of frozen product – volume of base) / volume of base x 100% = % overrun

  (6 liters – 4 liters) / 4 liters x 100% = 50% overrun

- If the ice cream base has a liquid flavor added, such as praline paste, it would dissolve into the base (before it is churned) and air can be incorporated into it. To determine the overrun, use the following formula:

  (volume of frozen product – (volume of base + volume of liquid flavor) / (volume of base + volume of liquid flavor) x 100% = % overrun

  EXAMPLE: 5 liters plain ice cream base + 1 liter praline paste results in 8 liters of frozen ice cream

  (8 liters – (5 liters +1 liter)) / (5 liters +1 liter) x 100% = 33% overrun

It is very important to calculate the overrun on your products in order to establish consistency in the finished product and in yield. The longer the base churns in the batch freezer, the more air will be incorporated. When testing a recipe, it might take a few tries before obtaining the desired overrun, which will depend on the desired consistency. Once the desired overrun is established, however, it will be sufficient to record the time it took from its liquid stage to its frozen stage at the desired overrun rather than to calculate the overrun each time that you churn a batch of ice cream. When the product is churned subsequently, all you need to do is set the timer on the machine so it stops freezing at the precise moment you've determined. Remember, though, that this only applies to items churned in the batch freezer.

Determining overrun in a Pacojet is relatively easy and is based on the same principle and formulas as those for the batch freezer. Pacotizing time will always be the same as long as the machine is working correctly. If your bases are similar in nature and the ingredients used are more or less the same, your overrun will be consistent in most of your frozen product. You should, however, test the overrun at least once for each new frozen dessert, so that you know how much air is being incorporated into your product. Also, if you test different recipes and methods than you are used to, make sure you test the overrun on the finished product.

Potential Dairy-Based Aerated Frozen Dessert Defects

Mistakes can and will happen. Once they are made, though, it is not possible to correct them; you are better off starting over. Don't forget that precision, the understanding of ingredients, and knowledge and execution of method are all determining factors in the finished product. Defects will occur if one of the links in the chain is broken, and this can range from not scaling out the ingredients properly to not making the base correctly to not churning it properly to not storing it in an adequate environment to not taking care of it during service. The following is a list of things that can go wrong and why they happen.

DEFECT	INDICATOR	CAUSES
Chunky	Visual and textural: coarse texture produced by coagulated eggs	Base may have been heated too high
Grainy	Visual and textural: seized fat Visual and textural: solid powdered ingredients have clumped	Over-churning Ingredients were not dissolved all the way or were incorporated improperly
Gummy	Visual and textural	Too much stabilizer Excessive overrun
Sandy	Visual and textural	Product melted slightly and was then refrozen
Fluffy	Visual and textural	Very high overrun Low amount of total solids Insufficient stabilizer
Crumbly	Visual and textural	High overrun Insufficient emulsifiers or stabilizers Low total amount of solids
Melts too quickly	Visual and textural	Freezer is malfunctioning Room temperature is too high Low total amount of solids Insufficient stabilizer
Icy	Visual and textural	Melted to a degree after freezing and was then returned to ideal temperature Low total amount of solids Low protein Insufficient ageing (see page 56) Insufficient homogenizing Slow freezing Slow hardening Inconsistent freezer temperature (temperature fluctuations)

Graininess in spun ice cream

Iciness in spun ice cream

Reserving and Use During Service

Even when you have taken all the precautions to ensure that the finished product is defect-free, it still has to sit in a freezer during service, where the door will be opened and shut many times. This will result in the product going through heat shock. This is a situation where the use of stabilizers will reduce the formation of large ice crystals due to meltdown and, as a result, the product will stay foamed, meaning that the air bubbles will stay in place and the texture will not be compromised. To prevent any unnecessary decrease in quality, store the finished product in small containers as opposed to one large container. If you churned four liters of ice cream, divide it into four 1-liter containers instead of a single 4-liter container. This will ensure that the product that was churned early in the morning will have the same quality throughout the entire day.

With a Pacojet, you have the added convenience of pacotizing one liter at a time. When you have scooped through half of a beaker during service, it is a good idea to pacotize another liter so that when the first one runs out, you are ready to keep going.

Other guidelines to keep in mind while going through service are:

- *Always* keep your containers covered while they are in the freezer.
- *Only* open the door to your freezer to take product out or to put it back. Be quick in doing so.
- Always use a clean and hot scoop or spoon. Make sure that the hot water you use to keep your scoops and/or spoons is always clean. Running water is always better and more sanitary.

SHELF LIFE The ideal holding time for ice cream, custard-base ice cream, gelato, and sherbet in a –10°C / 14°F freezer is no more than 18 hours or the duration of two services (lunch and dinner). Since some of these products will have little or no stabilizers or emulsifiers, they will not withstand longer periods of time in the freezer without a significant deterioration in quality. The products found in the supermarket freezer generally have higher concentrations of stabilizers or emulsifiers and/or air to prolong their shelf life and maintain their texture and smoothness. Just for the sake of experimentation, churn any plain ice cream base and leave it in the freezer for two weeks, then taste the difference.

To maintain the highest-quality product, make sure that the freezer did not have major temperature fluctuations while the product was in it. There will have to be necessary opening and closing of the freezer door to get the product in and out of the freezer, but be careful to make it quick to reduce the amount of heat shock that your freezer and its contents will go through. This is why it is important to invest in a freezer that has a sufficiently large compressor that will be able to compensate for temperature increases in short periods of time.

It is not recommended to re-churn or re-pacotize your items to reduce food waste. Some pastry chefs will diligently let their frozen products thaw after service so they can be re-churned the next day. Some with Pacojets will leave the beaker in the freezer to harden so it can be pacotized again the next day. While this practice might make perfect sense to some, it really works against the quality of the product for the following reasons:

- While some of the air bubbles will escape after the product thaws, there will still be some air present in the base even in its liquid state, so when it is re-churned, there will be more air bubbles incorporated into the finished product than you may have anticipated.
- There may have been some accumulated condensation that settled on the product's surface while in the freezer. This adds moisture to the base, which will turn into ice crystals once the product is re-churned. Since the utensil that is used to scoop needs to be dipped in hot water in order to obtain a clean scoop, even if you tap it on a clean towel before scooping, there will be some unwanted water going in. This water will also turn into ice crystals. An increase in ice crystals will negatively affect the final texture.

A more efficient way to prevent food waste is to estimate how many desserts you will sell based on the expected covers you have for a given service. How many of each dessert do you usually sell? Does the item feature a popular flavor like vanilla or a not-so-popular flavor like mangosteen? Take the time to see how much each quenelle weighs in its frozen form, melt it, then weigh it again. Multiply that weight by the amount you expect to sell of that dessert and add 10 percent, just in case you sell more than you expect. This will be the amount of base that you will churn or pacotize. It is better to lose 10 percent than 20, 30, or 40 percent. An interesting occurrence in restaurants is that your customers might order the dessert they see on the table next to them, because, let's face it, most of us fall in love with what we see more than with something we read about, and they may also assume it is safe to order since someone else ordered it. This might decrease sales on the item you thought would fly out the kitchen, and sales for the dessert you thought might not be very popular might sell out before the end of service. Unfortunately, there is nothing you can really do about this, except churn an extra batch during service if you can detect a pattern in your tickets. It might not harden in time to serve, though, so try to keep it in one of the colder spots in your freezer to speed up the hardening process. How much you expect to sell of each dessert is based on your own experience and sales history. Some restaurant systems, such as Micros, can be programmed to itemize the sales of each dessert per day, week, and month. Use this technology, if available, to help base your calculations on this information if you aren't sure how much to make.

Consider other factors as well. For example, it was supposed to be a nice sunny day, but Mother Nature had other plans and it is pouring outside. Two things may happen: there might be some reservations cancelled and/or people might not be in the mood for coconut sorbet. This is when you have to work with the front of the house to push the sale of those desserts if you see that their sales are dwindling. As for "no-shows," there is really nothing you can do here, except make sundaes for the staff, in which case it won't be a complete waste. Experience and solid numbers are your best friends.

chapter five Non-Dairy Frozen Desserts

Machine Churned or Pacotized/ Scraped and Shaved

THE PREVIOUS CHAPTER EXPLAINS THE USDA'S DEFINITIONS FOR DAIRY-BASED TYPES OF FROZEN DESSERTS. Unfortunately, there are no USDA definitions for non-dairy-based frozen desserts and they are not government regulated. These are categorized in this chapter and include sorbets, frappés, granités (or granitas), and ices.

There are a variety of definitions from various sources for these products, which could leave you more confused than informed. For example, according to one well-known dictionary, a sorbet is similar to a frappé, is usually made from fruit juice, and should have a mushy consistency. "Mushy consistency" doesn't do much justice to the consistency of sorbets, and a frappé is in a completely different category of frozen desserts.

Another food enthusiast dictionary claims that *sorbet* is French for "sherbet" but is distinguished by the fact that it never contains milk and has a softer consistency than sherbet. The same dictionary notes that sorbets are often served as a palate refresher between courses or as dessert, and that they are sometimes called ices or granités. This definition makes no clear distinction between a sorbet, a sherbet (which, as mentioned in the previous chapter, *must* contain dairy in order to receive that designation), an ice, and a granité. Neither of the previous definitions gives a solid, correct definition of what a sorbet is, often putting it into different categories all together.

Speaking of *granité*, the same dictionary defines granité as a frozen mixture of water, sugar, and liquid flavoring with four parts liquid to one part sugar, and notes that granités are stirred frequently during freezing to produce a slightly granular texture. In this definition there is a very imprecise ratio of sugar-to-liquid, which does not apply to every type of granité. The ingredients used for a granité can be as simple as a liquid with a certain amount of sugar or as complex as the Almond Milk Granité on page 399.

Another definition for *granité* points out that it is an Italian sorbet popularized by Tortoni in Paris in the nineteenth century, and defines it as half-frozen, with a granular texture made of a lightly sweetened or flavored syrup. According to this source, granité differs from sorbet because it does not contain Italian meringue. Does half-frozen also mean it's half-melted? If so, how and where would this product be kept? Can't granités be made from anything else?

All of these definitions have some truth to them, but it is necessary to set the record straight to prevent any further misunderstanding. The following are the most accurate definitions for small-batch production. They are divided into two categories based on their production methods. The first category requires a batch freezer or Pacojet to be processed and includes sorbets and frappés. Their texture is smooth and delicate because when they are churned or pacotized they form minuscule ice crystals that trap similarly minuscule air bubbles. The second category, granités, ices and ice pops, need only a freezer. Ice, whether in small but still visible crystal form or as a single solid piece, is the desired end result. Their main differences are in the way they are frozen, the size of the ice crystal, and their mouth feel.

Varieties and Definitions

MACHINE-CHURNED OR PACOTIZED NON-DAIRY FROZEN DESSERTS

Sorbet

A sorbet is an aerated non-dairy frozen product that is churned in a batch freezer or pacotized in a Pacojet. Sorbets are made mainly of a fruit or vegetable juice, a fruit or vegetable purée, an infused or flavored liquid, a wine, or a liqueur. They contain a percentage of sugar (typically 25 to 32 percent for dessert preparations; this sugar is the total sugar that may be found in any of the ingredients, such as a fruit purée plus the added sweetener) whose amount is dependent on the desired sweetness and the sweetness of the main component. In other words, a sorbet is not necessarily a dessert. The type of sugar (or sugars) used will depend on the desired result and flavor (see sugars, page 15). An acid (generally in the form of lemon juice) is sometimes added to intensify flavor and control sweetness.

The addition of stabilizers is a common practice employed to protect the quality of the sorbet during service, but they are not an indispensable ingredient. However, without the use of stabilizers, the sorbet might suffer from heat shock during service, and from freezer burn as well (see stabilizers, page 18). If stabilizers are not being used, the sorbet base should ideally be pacotized. Remem-

ber that a Pacojet can be used during service to process frozen items as you go and give you a consistently smooth product, while a batch freezer is a one-shot deal that might have a negative effect on the sorbet when it sits in a freezer for an entire day with the temperature fluctuating due to use. If stabilizers are going to be added, a batch freezer should be used (see batch freezer, page 37). Emulsifiers are never added to sorbet bases, since sorbets contain little to no fats that need to be emulsified.

On average, a dessert sorbet will read between 25° and 32° Brix in the refractometer (remember that the percentage of sugar is the same amount in Brix degrees). A savory sorbet should read 15° to 25° Brix. The use of a Pacojet is highly recommended for savory sorbets. Sugar helps the formation of minuscule ice crystals that trap minuscule air bubbles, which contribute to the finished product's smooth texture. The Pacojet will produce minuscule air bubbles through "drilling" no matter what the sugar content is of the sorbet. However, be advised that a savory sorbet will have a shorter shelf life in the freezer because, even if you pacotized it, the lack of sugar will cause those air bubbles to collapse. The sorbet will slowly deflate and the product will eventually harden completely and become icy within an hour. Pacotize as you go.

There are some general guidelines to use when formulating sorbet. A sorbet should contain a bare minimum of 30 percent "sweet" fruit purées (from fruits such as strawberry, mango, raspberry, or other fruits that can be puréed) or 15 percent acidic fruit such as citrus fruits or passion fruit. Sweeter fruits tend to contain more pulp (or thicker body) than acidic fruits, which tend to have a higher liquid to solid ratio. These percentages are the absolute minimum needed to produce a good (not excellent) sorbet, and they are based on the finished product's weight, overrun included, (meaning that even if you have a larger amount of volume due to overrun, the weight will be the same before it is churned or pacotized). The ideal percentage of "sweet" fruits is 40 to 60 percent, and is 25 to 40 of acidic fruits. The formulation for overrun that appears on page 64 in Chapter 4 applies to sorbets as well. The parameters for testing overrun in ice creams, gelatos, and sherbets is the same for sorbets.

A variation on sorbet is the *spuma,* or "spoom," which is of Italian origin. It is a sorbet that has a measured quantity (generally about 5 percent) of Italian meringue added to it. An Italian meringue is a cooked meringue, meaning that sugar syrup is cooked to 120°C / 248°F and then poured into whipping egg whites as they reach the stiff peak stage. The heat from the sugar pasteurizes the egg whites and coagulates the albumen protein, which envelopes the incorporated air, thus making it a stable and permanent foam. This foam, when added to a sorbet when it is about to be extracted from a batch freezer, will produce a very smooth sorbet. However, as smooth as the meringue makes the spuma, it tastes somewhat eggy and "un-sorbet-like." If you must add egg whites to a sorbet, always make sure that they are pasteurized.

Recommended Minimum and Maximum Percentages of Sorbet Composition

INGREDIENT	MINIMUM	MAXIMUM
Fruit purée (sweet fruit)	40% total weight	60% total weight
Fruit purée or juice (acidic fruit)	25% total weight	40% total weight
Dry extracts (fruit solids plus sugar and powdered glucose)	31%	36%
Stabilizer (if used)	0%	1% total weight
Percentage of sugar (or Brix)	25% (or 25° Brix)	32% (or 32° Brix)

Frappé

Frappé is the past participle of the French word *frapper,* meaning "to strike or to beat." It is so named with good reason, because a frappé is a combination of a fruit sorbet and another liquid or dairy product that is mixed in a blender until it obtains a slush-like consistency. The liquid can be flavored or infused water, a fruit or vegetable juice, soy milk, wine, or liqueur. If dairy is being used, it should be low-fat or fat-free milk or fat-free yogurt, because if there is a significant amount of fat present, it will seize as it is processed in the blender due to the friction of the blade. The proportion of sorbet to the added liquid or dairy product is not written in stone, but there should be a majority of sorbet in the finished product.

A frappé should be served as soon as it is blended; otherwise the liquid tends to separate from the frozen sorbet. Meltdown occurs quickly because the liquid's temperature is much higher than the sorbet, and since they are in direct contact the sorbet's temperature will rise as well.

Frappés are classified under non-dairy frozen desserts even though they *might* have the addition of a dairy product because their main component is not dairy-based, and whatever is to be added to them is entirely up to the pastry chef. Frappés can be savory (Bloody Mary frappé, anyone?). Frappés should not be confused with milk shakes, because milk shakes are made with dairy-based frozen desserts (ice cream, custard-base ice cream, gelato, and even sherbet and frozen yogurt) and the addition of milk (hence the name).

SCRAPED AND SHAVED FROZEN DESSERTS

Granités

Granité is French for "granite," and the dessert is named for the stone because of their similarity in appearance. It is known as *granita* in Italian. A granité is a semisolid mass of small but visible ice crystals that are formed by occasionally scraping or stirring a liquid that has been placed in the freezer. This liquid is scraped or stirred at various times during the freezing process to prevent the liquid from freezing into a solid block of ice, and so it forms small ice crystals instead. Ideally the liquid is scraped or stirred with a fork every 15 to 30 minutes in a freezer that is set to –18°C / 0°F. It is important not to let the semi-frozen liquid sit for too long in the freezer, especially toward the beginning of the freezing process. The flavors and sugar can separate from the remaining ingredients and then the flavor and sweetness will not be evenly distributed throughout the finished product. Although the granité's ice crystals should be very small, they are still visible. This is one of the big differences between granités and sorbets, in which ice crystals are minuscule and should not be visible to the human eye.

Granités are composed mainly of a fruit or vegetable juice, an infused or flavored liquid, or a wine. They should never be made of a thick purée because it will not crystallize as a liquid would, and never with a liqueur with an alcohol content higher than that of wine, because alcohol does not freeze. Granités *can* be made with an infused or flavored milk, but, again, it should be fat-free to guarantee the proper ice crystal formation, which fat will hinder. No other dairy product is recommended. Granités require no stabilizers or emulsifiers. Ice crystal formation is crucial, and both stabilizers and emulsifiers will prevent that.

Granités are generally sweetened with between 16 and 19 percent granulated sugar by weight because it helps with crystal formation; remember, the less sugar in a base, the larger the ice crystals that will form. Think of sorbets that have a higher sugar content (between 25° and 32° Brix); this results in smaller ice crystals. Liquid sugars will prevent solid crystal formation and delay freezing time. Granités *can* be used for desserts as well as for savory applications,

where the sugar is reduced significantly, if not completely. Savory granités should read less than 15° Brix.

It is recommended to add a small amount of salt (.3 percent of the total weight) to the granité base to increase flavor, as well as to help in ice crystal formation. Although salt can melt ice, it can also keep it colder for longer periods of time if used in the right proportion. This principle is exemplified by hand-cranked ice cream freezers, in which the ice is mixed with salt. This initially melts the top layer, but it eventually solidifies that layer, forming a large mass of ice that could be kept hard for extended periods of time. Freezing a liquid granité base in a blast freezer will greatly reduce scraping time, which is very convenient, but care must be taken not to let the product freeze too much before all the necessary scraping is done. You will need to scrape as often as you do with a regular freezer, but the time that elapses between scrapings is reduced significantly, to between three and five minutes when the blast freezer is set to −30°C / −22°F.

Shaved Ices

A variation on a granité is the shaved ice, which is made by simply freezing water (or a flavored liquid) and then shaving the resulting ice block with a fork, ice pick, or ice shaver to obtain small, pure ice crystals. The shaved ice is placed in an appropriate vessel (such as a bowl or glass), and, once it is placed in front of the customer, a flavored liquid can be poured in when using unflavored ice. This flavored liquid can be anything that can be used to make a granité. In fact, it is believed that shaved ice was the original frozen dessert, created by the Chinese. The Romans would pour sweet wine on top of snow (see page 2). In some places, this is incorrectly called a frappé.

Ices

An ice can have the same ratio of ingredients and physical attributes as a granité as far as being water-like, but you can also freeze purée-like bases into ices, like a raspberry ice pop. The sugar content is what stays the same, 16 to 19° Brix, yet it is left to freeze as a solid piece in order to make the finished product. The liquid base for an ice can also have the same components as a granité, such as fruit or vegetable juice, an infused or flavored liquid, or a wine, but ices can also be made with a fruit purée because purées freeze a lot better when they are left as a solid piece.

The shape of the ice is limited only by the pastry chef's imagination, but it must be something that will be easy to eat. That is, it should be easy to bite, chew, and hold and should not make a huge mess or be awkward to eat, especially in a fine-dining establishment.

Production Techniques

This section will cover the most effective techniques used to produce the aforementioned varieties of frozen desserts. There are other methods, but they aren't as precise and the results are just good, not excellent.

SORBETS Even though sorbets are not as physically complex as dairy-based frozen desserts, they do require knowledge of various methods and precise execution of these methods in order to produce a high-quality product. Listed below are three different methods for creating sorbets; each one will produce excellent results. Choosing the appropriate method will depend on the desired ingredient, available machinery, work environment (How efficient is the temperature control in your work area? Is the shop hot or tempered or cold?), and personal taste.

Classic Method: Using a Refractometer

This is perhaps the most straightforward and quickest method used to obtain a sorbet in its simplest form. The sorbet bases that are churned using this method contain no stabilizers, and, for that same reason, they might not be very freezer stable. They can melt quickly due to heat shock and develop large ice crystals during a busy service.

The basic concept behind this method is to combine the main liquid (be it a fruit or vegetable purée, a fruit or vegetable juice, any flavored or infused liquid, or a wine) with simple syrup. There are two key points to consider:

- The ratio of sugar to water in the simple syrup. Simple syrup is just a mixture of water and sugar that has been boiled to create a uniform liquid in which the sugar crystals have dissolved. The classic ratio of sugar to water in simple syrup for sorbet production is 65 percent sugar and 35 percent water. This will give a simple syrup at 65° Brix. However, this ratio is not written in stone: a 50:50 ratio can yield excellent results as well. You must keep in mind that whichever ingredient is in the majority will have a direct effect on the sorbet. For example, if there is too much water in the syrup, the main flavor will be watered down, but if there is too much sugar, the base will be too thick. It is recommended not to exceed a 50:50 ratio of water to sugar in the simple syrup and, in general, the recipes in this book are formulated using simple syrup at 50° Brix. Also, always add the simple syrup to the base after the syrup has cooled down to room temperature.
- The final reading of the sorbet base in a refractometer should be between 25° and 32° Brix, with 30° to 32° Brix being ideal for dessert sorbets. The ideal environment in which to take a Brix reading is one where the temperature is 20°C / 68°F and where the liquids are also at the same temperature. If the mixture is too cold or too hot, the refraction will be inaccurate. There are refractometers that can measure no matter what the temperature of the environment or the liquid is, but they are prohibitively expensive (in the thousands of dollars).

To make sorbet using the classic method, add simple syrup directly to the flavored base.

1. Place the liquid purée, or infusion, in a stainless steel bowl. This main liquid should be free of solid particles and previously strained through a fine-mesh strainer.
2. If the main liquid was refrigerated, remember to temper it to 20°C / 68°F. To temper the main liquid, place the bowl in a larger bowl that is filled halfway with warm water at 40°C / 104°F. Stir until the main liquid reaches 20°C / 68°F.
3. Pour in some simple syrup (at 20°C / 68°F as well) and stir with a whisk. The simple syrup amount should be the equivalent of 20 percent of the weight of the main liquid.
4. Take a reading with the refractometer. If the refractometer reads below 25, add more simple syrup. If you have gone above the desired Brix, simply add more of the main liquid. Acidic or bitter liquids will require more simple syrup than "sweeter" ones, unless a more savory result is wanted.
5. Once you have reached the desired Brix, the sorbet base can be refrigerated (up to 3 days in most cases) or churned.
6. Churn the sorbet base and transfer to a –10°C / 14°F freezer.
7. Let the sorbet harden in the freezer for 2 to 4 hours before serving. Reserve for service.

If using this method, pacotizing the sorbet is highly recommended. Keep in mind that there are no stabilizers present and the nature of the way the Pacojet works will accommodate their absence. By using a Pacojet, you can pacotize beakers as you need them, thus ensuring consistent quality in the product throughout service. A batch freezer will yield good results, but if you are working in an operation where lunch and dinner is served, churn one batch in the morning for lunch service and one around noon for dinner service. This will greatly reduce any defects the sorbet might develop from melting and sitting in a freezer with changing temperatures.

This method has effectively replaced a very rudimentary practice of using an egg to determine the sugar density of a sorbet. If you have never heard of this method, it consists of combining simple syrup with the main liquid and then, when it feels about right, "floating" an egg in the mixture. If the exposed surface of the egg is about the size of a quarter (some will say a dime), then your sorbet is ready. Needless to say, this method is imprecise, because eggs do not weigh exactly the same the world over, and risks introducing salmonella bacteria into the base.

Modern Method #1: Using a "Sorbet Mix"

A "sorbet mix" can be used in Method #2 as a substitute for the simple syrup used in Method #1. This sorbet mix is a combination of granulated sugar, powdered glucose, stabilizers, and water that is added to a purchased fruit purée or juice and, in most cases, a specific amount of water, to produce a smooth and freezer-stable sorbet. This sorbet mix can be left at room temperature if it is to be used within 2 or 3 days; otherwise it should be refrigerated. Leaving it at room temperature for longer than 3 days may cause the sugars to crystallize.

The recipes that follow are intended for pre-made fruit purées and juices, which generally contain a total of 10 percent sugar by weight. Fresh fruit and vegetable purées, fresh vegetable and fruit juices, infused or flavored liquids, and wine can be sweetened with this mix, but you should use the refractometer method and not the formulas provided on page 78, because sugar content will vary from that which is found in the pre-made variety. Remember, there is a reason why there are specific amounts of sugar in a recipe (see sugars, page 15).

Sorbet Mix

YIELD 5 KG / 11 LB .37 OZ

1955 g / 4 lb 4.96 oz water

2102 g / 4 lb 10.14 oz sugar

909 g / 2 lb .06 oz glucose powder

35 g / 1.23 oz Sorbet Stabilizer Mix (see page 387)

Once the correct ratio of ingredients is calculated, the mathematical formula method will yield a stabilized syrup that can be combined with a flavored base and processed into sorbet.

1. Combine 10 percent of the sugar with the sorbet stabilizer mix. Mix thoroughly.
2. Place the water, remaining sugar, and the glucose powder in a pot over high heat. Stir constantly using a whisk.
3. When the mix reaches 40°C / 104°F, slowly pour in the sorbet stabilizer and sugar mixture as you stir. If the mixture is poured in too quickly, the stabilizer will clump up and therefore not work.
4. Continue stirring until the mixture reaches 85°C / 185°F. At this temperature the stabilizers will fully hydrate and the sugars will dissolve completely.
5. Take the pot off the heat and transfer the liquid mix to an ice bath. Let the mix cool down completely before you add it to the main ingredient.
6. Once you have combined the sorbet mix with the main ingredient and water, let the mix "mature" or age for at least 2 hours and up to 6 hours, which is ideal. This will give the stabilizers and sugars time to bind with the main ingredient to produce a high-quality sorbet.
7. Churn the sorbet base and transfer to a –10°C / 14°F freezer.
8. Let the sorbet harden for 2 to 4 hours before serving. Reserve for service.

Because there are stabilizers present, the recommended machine to churn sorbets made with this method is a batch freezer. A Pacojet will also produce an excellent product, and there is the added benefit of pacotizing as many beakers as you need before service without having to do so at different times during the day, because the stabilizers will maintain the sorbet's integrity.

Modern Method #2: Using a Mathematical Formula

This is perhaps the most complicated and time-consuming method. However, if the formula is used correctly, it will ensure that the finished product is of the highest possible quality and will last throughout lunch and dinner service without significant deterioration. This is the method that is highly recommended if a batch freezer is the only machine available.

This recipe combines water, a main flavoring ingredient (liquid, purée, solid, or infusion), stabilizers, and a variety of sugars, each one of them with a specific purpose. The water is meant to be a vehicle for the dry ingredients in order to fully hydrate and dissolve them before the main ingredient is added. The delicate balance of ingredients and precision during manufacture are crucial to obtaining a successful product. If the formulation is incorrect and/or the ingredients aren't handled carefully, the consequences can be disastrous.

Because there are stabilizers present, the recommended machine to use is a batch freezer. A Pacojet can also be used to churn sorbet bases made with this method because the stabilizers will preserve the quality of the sorbet. You are also afforded the convenience of pacotizing as many beakers as you need before service without having to do so at different times during the day.

A mix of stabilizers can be added slowly to a heated flavored base as one modern method of sorbet production. Be sure to sprinkle the mixture slowly so it won't clump.

Mathematical Formulation

Based on the table of minimum and maximum recommended percentages on the next page, begin the formulation process. There is an example for the formulation of blood orange sorbet accompanying each step in order to understand the process better. There is also an alternate table on page 79 that encapsulates the mathematical formulation. (Refer to chapter 2 for the required numbers for specific fruits, sugars, and stabilizers with regard to their solids content, sweetening power, etc. These numbers will be used for the mathematical formulation.)

Maximum and Minimum Percentages for Sorbets

INGREDIENT	MINIMUM	MAXIMUM
Fruit purée (sweet fruit)	40% total weight	60% total weight
Fruit purée or juice (acidic fruit)	25% total weight	40% total weight
Dry extracts (fruit solids plus sugar and powdered glucose)	31%	36%
Stabilizer (if used)	0%	1% total weight
Percentage of sugar (or Brix)	25 % (or 25° Brix)	32 % (or 32° Brix)

1. Determine the desired yield in grams. For this example, the desired yield is 5000 grams.
2. Determine the percentage of fruit juice to be used. For this example, we will use 35 percent as the desired percentage, or 1750 grams. Since the example uses blood orange juice as the base, the percentage falls in the acidic fruit juice category from the above table, and the percentage is calculated in weight in relation to the desired yield.
3. Determine the desired percentage of solids (dry extracts) based on the above table; 31 percent of the total yield is 1550 grams.
4. Calculate the following standard solids. These amounts are solids that are part of the basic ingredients; they will be used to determine how much granulated sugar the recipe will need.

Standard Solids

TYPE OF SOLID	ACTUAL PERCENTAGE	ESTIMATED PERCENTAGE	ESTIMATED AMOUNT	ACTUAL AMOUNT
Fruit solids %: (input manually; see fruit chart on page 412 for the list of the most widely used fruits)	10%		175	175
Glucose powder (95% solids): Glucose powder is 95% solids and 5% water; we are using 5% of the total weight of the recipe for glucose powder, therefore, 95% of 5% is 4.75%. This amount (237.5 g) is used to calculate these solids, but the whole amount, in this case 250 g, is needed to calculate the recipe accurately. This is why we have the column on the far right.	5.%	4.75%	237.5	250
Sorbet stabilizer (100% solids): For this recipe we will use .35% of the total recipe as the stabilizer weight; stabilizers are 100% solids.	.35%	.35%	17.5	17.5
Total weight of the above solids in grams: This is the addition of the three ingredients above. We will use the column on the far right (highlighted in red) for the formula.	15.35%	15.1%	430	442.5

The amount required to complete the desired percentage of solids is derived from subtracting the standard solid amount from the calculated desired amount of total solids. This will be the amount of sugar to add to the formula, *not the recipe*.

1550 (desired amount of solids) – 430 (standard recipe solids) = 1120 g

However, since we have to use the information from the column on the far right because the whole weight of the powdered glucose has been factored into it, the actual amount of sugar we have to add is as follows:

1550 (desired amount of solids) – 442.5 (standard recipe solids with the glucose powder water content factored in) = 1107.5 grams of granulated sugar

5. Determine the required water amount.

Desired Yield – all ingredients = water amount

5000 g total yield

– 1750 g fruit juice

– 237.5 g powdered glucose

– 17.5 g stabilizer

– 1120 g granulated sugar

= 1875 g water

Finished Recipe

INGREDIENT	AMOUNT (IN GRAMS)	AMOUNT (IN POUNDS)	PERCENTAGE
Purée or juice: blood orange	1750.0	3.91	35.0
Glucose powder: (Remember that this amount is from the far right column because we are using the whole 5% of glucose powder; the 4.75% was to calculate the basic solids in the recipe in order to determine how much sugar to add.)	250.0	.56	5.0
Sugar	1107.5	2.47	22.15
Stabilizer	17.5	.04	.35
Water	1875.0	4.19	37.5
Total weight	5000.0	11.16	100.0

Procedure for Modern Method #2

1. Determine the formula for the sorbet.
2. Scale all of the ingredients accurately.
3. Combine all of the dry ingredients in a bowl.
4. Put the water in a pot over a high flame and bring it up to 40°C / 104°F.
5. Once the liquid reaches 40°C / 104°F, pour in the dry ingredients carefully but quickly, while whisking constantly.
6. Bring the mixture up to 85°C / 185°F and maintain this temperature for 2 minutes (turn the heat off if necessary). This will allow the stabilizers to fully hydrate and all of the dry ingredients to dissolve. Do not exceed heating time and/or temperature, in order to prevent excess liquid evaporation that could alter the formula.
7. Chill mixture down to 4°C / 39°F.
8. Mix in the main juice, purée, or infused liquid.
9. Let the sorbet base mature for at least 2 hours and up to 6 hours.
10. Churn the sorbet base and transfer to a –10°C / 14°F freezer.
11. Let the sorbet harden for 2 to 4 hours before serving. Reserve for service.

Pros and Cons Recap of Each Method

	METHOD #1 (REFRACTOMETER)	METHOD #2 (SORBET MIX)	METHOD #3 (FORMULATION)
Pros	Quick and easy to make Flavor and texture can be ideal	Quick and easy to make Freezer stable Heat-shock resistant	Produces consistently high-quality products Freezer stable Heat-shock resistant
Cons	Due to lack of stabilizers, can develop multiple defects (see below) Relies on the use of a refractometer, which can be expensive	Some pastry chefs do not like the texture that results from using stabilizers.	Mathematical formulation can take a lot of time and patience. Erroneous calculations can have negative results on the final product (see below).

Possible Sorbet Defects

The following is a list of things that can go wrong and why they happen. Understanding the ingredients, machines, storage, and use during service are key.

DEFECT	INDICATOR	CAUSES
Gummy	Visual and textural	Too much stabilizer
Icy	Visual and textural	Not enough stabilizer Under-churned (not enough air bubbles were incorporated) Low total solids Slow freezing Slow hardening Temperature fluctuations in the freezer (heat shock) Not enough sugar
Fluffy	Visual and textural	Not enough sugar or not enough stabilizers; this usually occurs when the sorbet is mostly fruit and nothing else.
Crumbly	Visual and textural	Over-churned
Hard	Textural	Sorbet is too old (excessive time in the freezer) Not enough sugar or not enough stabilizers Freezer is too cold (below –18°C / 0°F) Low total solids
Sticky or syrupy (seems to puddle)	Visual and textural	Too much sugar. The freezing point becomes excessively depressed and the sugar separates from the water because there is such a small amount of water that it can't retain the large amounts of sugar. In these cases, whatever remains solid (frozen) is icy.

Shelf Life

See the Shelf Life section in Chapter 4, page 66, for additional information; those guidelines apply to sorbets as well.

The key points are:

1. Hold churned sorbets in a freezer at –10°C / 14°F for a maximum of 18 hours or two services (lunch and dinner). If they lack stabilizers they can deteriorate quickly and require special attention and care during service. Pacotized

sorbets should be processed every couple of hours during the day.

2. Reduce the time the freezer door remains open. Major temperature fluctuations will cause the sorbet to become icy (heat shock).

3. Make sure your freezer is working properly. A good freezer will have a compressor that is capable of preserving the ideal temperature (–10°C / 14°F) throughout a busy service.

4. Do not re-churn or re-pacotize sorbet bases. Even when they are completely melted, they will still retain a small amount of air bubbles, which will increase their overrun (volume) when they are re-churned or re-pacotized, resulting in a significant impact on texture. Churn only what you think you will need based on the item's popularity or sales history. Check your sales reports for a week or 10 days, but also consider other factors, like the weather, current events, etc. See page 79 to determine the exact quantity of sorbet to churn based on solid numbers.

FRAPPÉS While making frappés is not an exact science, there are a few important points to consider:

- The proportion of sorbet to the added ingredient depends on the desired result, but there should always be more sorbet. Generally, there should be at least 2 parts sorbet to 1 part of the added ingredient. Otherwise the frappé will be too watered down and the sorbet's flavor will not have enough presence.
- A high-speed blender is recommended in order to obtain a smooth frappé. A Pacojet will also yield ideal results for frappes. All the frappes on page 174 were processed in a Pacojet.
- As soon as the frappé is blended it should be poured and served, otherwise the added ingredient tends to separate from the sorbet. This creates an unappetizing watery slush in which the sorbet isn't uniformly blended with the added ingredient.
- If a dairy product is added to the sorbet, make sure it is either low-fat or fat-free. Higher-fat-content dairy tends to seize while blending, creating small clusters of solid fat, because the friction of the blades will over-whip the fat. It is similar to what happens when you over-whip heavy cream. Keep in mind that frappés can also curdle if you add a dairy product such as milk or heavy cream to an acidic fruit sorbet.

Method for Frappés

1. Combine the sorbet and the desired added ingredient in a blender.
2. Blend on high speed until you obtain a uniform mass.
3. Pour and serve immediately. Frappés have a very short shelf life.

Frappés are usually served in a glass. A straw is optional, but a demitasse spoon will work as well. If there is any frappé left in the blender cup, it is not recommended to refreeze the contents and blend again when they have re-frozen. The texture will be less than ideal. Instead, try to blend only what you need so that there is no waste.

Frappés are a blend of sorbet with another flavored liquid.

Stirring a granité during the freezing process prevents the liquid from freezing into a solid block.

The finished product should have small yet visible ice crystals and a semisolid consistency.

GRANITÉ The most important characteristic of a granité is its texture. In Italy there are at least three different styles: chunky and grainy, smooth (almost like a sorbet), and one that is a combination of both. The final texture is not written in stone and is more of a personal preference, but consider the following. In order to obtain a granité in which the ingredients are uniformly dispersed, scraping should be performed at even intervals of time before the liquid freezes too much. The more the liquid freezes without being scraped, the larger the ice crystals will be, and the flavors and sugar, which are heavier than water, tend to settle at the bottom of the pan. This process creates an insipid layer of ice on top and a very sweet layer of slushy syrup at the bottom. In order to obtain a pleasant, even flavor, it is necessary to scrape often, and this will result in fine, small ice crystals.

1. Place the main ingredient in a stainless steel bowl. The main ingredient is usually a fruit or vegetable juice, an infused or flavored liquid, or a wine. The infused or flavored liquid *can* be a dairy product, generally milk (preferably low-fat to fat-free). Heavy cream has too much fat to produce a proper granité, because the high fat content prevents proper ice crystal formation. Even though granités have been classified as non-dairy frozen desserts in this book, they can contain dairy, and they can also have savory applications. However, these two instances are fairly uncommon.
2. Make sure that the temperature of the main ingredient is 20°C / 68°F. If not, temper it.
3. Add some 65° Brix simple syrup that has a temperature of 20°C / 68°F. In very general terms, a good starting point is 1 part simple syrup to 4 parts of the main ingredient.
4. Whisk the mixture thoroughly. Take a reading on the refractometer. It should read 16 to 19° Brix. My personal preference is 17° Brix, which is not too sweet but sweet enough. For savory applications, reduce the Brix to 12 to 15° or less if desired. Always taste it to make sure the flavor is to your liking. It is good to trust a refractometer, but you should be able to trust your taste buds as well.

5. Pour the granité base into a stainless steel hotel pan. The size will depend on the desired amount.
6. Place the pan in a –18 C°/0°F freezer.
7. After 45 minutes to 1 hour, take the pan out of the freezer and scrape the ice crystals that will have formed around the rim of the pan.
8. Repeat this process every 30 minutes, always scraping in a circular motion to ensure even crystal formation.
9. Once all the liquid has frozen, transfer into a 4-inch deep hotel pan and cover. Return to the freezer and reserve for service.

SERVICE TIPS

- Divide your finished granité into at least two containers. Take them out of the freezer, alternating the containers each time. This will reduce heat shock and meltdown.
- Make sure the vessel in which you serve the granité is cold but not chilled. Remember that chilled plates will develop condensation on them, and condensation is not a welcome sight to a diner.
- When a granité is served, it needs to fly out of the kitchen because meltdown is even quicker than with ice cream and sorbets. Also, the granité should not be placed directly on the plate, but rather on another component of the dessert. If the granité is placed on, for example, cold lemon curd, it will last a few seconds longer than if it sits on the plate.
- Always remember that the frozen component is the last thing to go on the plate. Communicate with the wait staff to be ready for you when desserts need to be served. Watching your beautiful dessert melt before your eyes as it sits, waiting to be picked up, is very, very sad. You should only scoop when there is a runner close to the pastry station.
- Give the granité a quick scrape with a fork before serving to "fluff" the ice crystals that may have clustered during service. This will break them up and give them an ideal texture of loose ice crystals.
- Time is of the essence. Have the sense of urgency to plate your granité quickly and make sure the establishment's servers share this sense of urgency not only with the savory side, but with you as well.
- Granités can last more time in the freezer than sorbets and ice creams because of their icy nature, but their small ice crystals tend to clump up during extended periods of time. Some pastry chefs will just re-scrape the frozen granité the next day to break up these ice clusters, and while the consistency might be passable, it is not ideal. It is recommended to thaw the leftover granité after service and then to freeze and scrape the melted granité base the next day so it will be on point for service.

SHAVED ICE Nothing is easier than freezing water to make ice. Usually this ice is made from pure water, but it can also be mildly flavored or infused. If it is heavily flavored, remember that the flavors, being heavier than water, will sink to the bottom of the ice as it freezes, making the flavor dispersion uneven. The block of ice should be large enough to be shaved comfortably. The smaller the block, the harder it will be to shave.

1. Once the water has frozen into a solid block of ice, shave it away from your body using an ice pick or an ice shaver. Have a container ready where you can place the shaved ice. This container should be kept in ice so that as the shaved ice is placed in it, it won't melt.
2. Reserve the shaved ice in the freezer at –18°C / 0°F.

SERVICE TIPS

- As with the granité, which is similar in nature, have two containers filled with the shaved ice so that you can alternate them during service to reduce heat shock.
- Before portioning the shaved ice into the desired vessel, make sure that the flavored liquid that will be poured over it is ready to go. Also make sure that this liquid is always kept *very* cold.

- Plate it quickly and send it out quickly. In many restaurants, the wait staff love to describe the food that they are serving, and the diners will pause and listen to them attentively. This might be a good practice, but advise the staff to do all their talking as the liquid is being poured into the ice. The longer the ice stays solid, the better.
- After service, don't save the shaved ice; it's not worth it. You can get ahead by placing water in the freezer after service. This way you will have a solid block of ice that will be ready to be shaved the next day.

Shaved ice is produced by allowing water or a flavored liquid to freeze solid, then shaving the ice block with a pick or ice shaver.

ICES To make an ice, follow the same procedure to make granités up to the freezing and scraping steps.

1. Place the main ingredient in a stainless steel bowl. The main ingredient is usually a fruit or vegetable juice, an infused or flavored liquid, or a wine. The infused or flavored liquid can be a dairy product, generally milk (preferably low-fat or fat-free). Even though ices have been classified as non-dairy frozen desserts in this book, they can contain dairy, and they can also have savory applications. However, these two instances are fairly uncommon.
2. Make sure that the temperature of the main ingredient is 20°C / 68°F. If not, temper it.
3. Add some 65° Brix simple syrup that has a temperature of 20°C / 68°F. In very general terms, a good starting point is 1 part simple syrup to 4 parts of the main ingredient.
4. Whisk the mixture thoroughly. Take a reading on the refractometer. It should read 16 to 19° Brix. My personal preference is 17° Brix, which is not too sweet but sweet enough. For savory applications, reduce the Brix to 12 to 15° or less if desired. Always taste to make sure the flavor is to your liking.
5. Once the ice mix is made, pour into the desired mold. Don't forget that an ice should be easy to eat (not awkward or uncomfortable) and small enough to bite into without falling apart or making a mess on the diner's clothes. Keep this in mind when deciding on a mold. Using a lollipop or Popsicle stick is a good idea if the ice is large enough to be eaten in two or more bites. Otherwise, the diner will be chasing the ice around the plate, and a fork or spoon is not the best utensil for eating a solid piece of ice. You don't want to force your customers to use a knife to cut through the ice, either. Remember that form always follows function, not the other

way around. Also, remember that during freezing, flavors and sugars that are heavier than water will result in an uneven flavor distribution, since they tend to settle at the bottom of the mold. This is yet another reason to keep your ices small, so that they can be eaten whole and the flavors will meld in the mouth.

6. Let the ice freeze at –18°C / 0°F until solid. This will only take a fraction of the time in a blast freezer that it takes in a regular freezer.
7. Once the ice has solidified, it can be taken out of the mold, but it should be done at the very last minute to prevent freezer burn on your ice. If you do choose to keep all of your ices out of the mold, make sure they are properly covered so that they don't take on a "freezer taste." If you are reserving them for longer periods of time (more than 18 hours), make sure that they are kept in the mold in which they are frozen.
9. To unmold, place the ice mold into a warm water bath and let sit for a few seconds to ensure that the ice will be released in one piece.

SERVICE TIPS

- Usually the ice will be very hard when it is first removed from the freezer. Allow it to sit for 5 to 8 minutes before it is served, so it can soften a little and therefore be more palatable and easy to eat. If it's too cold, a person's tongue can easily stick to the ice.

Ices can have a shelf life of 2 or 3 days. If you choose to keep them for this long, make sure that they are kept in the mold in which they were frozen, to prevent freezer burn and unwanted flavor absorption. This can occur even when they are tightly wrapped during long periods of time (over 18 hours or two services).

Ices are produced by freezing flavored liquids into a solid form, such as the Spiced Merlot used to make this ice pop.

chapter six Aerated Still-Frozen Desserts

THE VARIETIES AND DEFINITIONS OF AERATED STILL-FROZEN DESSERTS TODAY HAVE BEEN LIBERALLY MISUSED AND CHANGED FROM THEIR ORIGINAL DEFINITIONS. There is no USDA definition for them, and even in France, where the majority of them originated, there is no legislation on their definitions. In France they actually fall into a category they call "non-controlled," but they are protected by "legal stipulations" and "general custom within the trade," which might sound a little contradicting. What one pastry chef thinks of as a frozen parfait is not necessarily what another one does, for example. What is known as a parfait in France may not be known as a parfait in the United States. For accuracy's sake, the definitions used in this book were taken from their country of origin.

This category of frozen desserts distinguishes itself by two basic factors. The first is that the product is aerated before it is frozen. Remember that when an ice cream is churned in a batch freezer, it is not only freezing, but it is also being foamed through the beating of the blade. This results in the incorporation of minuscule air bubbles that contribute to its texture. Aerated still-frozen desserts have at least one foamed ingredient (see foaming principles of ingredients, page 91), which can be heavy cream and/or egg whites, egg yolks, and/or whole eggs, as a major ingredient (to provide a smooth final product) that is folded into another set of combined ingredients we will refer to as the "flavor base" (flavored *pâte à bombe*, fruit purée or juice, custard such as crème anglaise, chocolate, etc.). The second distinct characteristic is that the products are frozen in a freezer, not a batch freezer, hence the name "still-frozen."

All still-frozen desserts have at least one ingredient that has the capacity to foam. It can be eggs, egg yolks, egg whites, or heavy cream, alone or in combination (e.g., whipped heavy cream and whipped egg whites). The desired texture of this type of dessert is similar to ice cream; it must be smooth in a frozen state. This smoothness is determined by the foam. Technically, a foam is the dispersion of air (or gas) in a liquid. This applies to any foam, like the foam on top of soda pop, the foam in a bubble bath, or whipped egg whites. During whipping, air or gas is dispersed into bubbles. These bubbles may have a very short life span if there are no proteins present to stabilize them. They will float to the top while the water that surrounds them drops to the bottom, and at this point they begin to deflate rather quickly. The interface (or surface of the bubble) is very fragile and can easily pop. Proteins trap the air bubble by surrounding it and vary from ingredient to ingredient. Egg whites contain albumin, egg yolks contain lecithin, and heavy cream contains fat molecules. Milk, which contains whey protein, can also be foamed, but because the proteins are very sparse (about 3 percent of the total weight of milk as opposed to egg whites, which are 10 percent protein), milk foams have a very short life span. Milk is foamed usually through steam (think of coffee drinks like cappuccino), and this steam is what disperses the air into the milk. Milk foams should be served as soon as they are foamed so that they don't lose significant volume. However, the addition of a protein, such as powdered soy lecithin, will make for stable and voluminous milk foam.

Varieties and Definitions

FROZEN PARFAIT In French, *parfait* means "perfect." It is composed of a cooked egg yolk foam (*pâte à bombe,* cooled to room temperature) or an Italian meringue, a whipped heavy cream foam (which will be the dominant foam), sugar, and a flavor base, usually a fruit purée or chocolate, melted but then cooled. In the United States, a parfait is served in a tall glass and is layered with fruit and sauces and is not typically frozen. In France parfaits are poured into a mold and then frozen. It is not written in stone that a parfait must be served in a glass or mold. It can be frozen into a desired mold (such as a sheet pan extender or terrine mold) and cut into the desired shape. The vessel does not make the parfait, the ingredients do. Proper foaming is crucial, as is in all frozen desserts.

BOMBE *Bombe* is the French word for "bomb." It has the same components as a frozen parfait, but with 50 percent more heavy cream. The finished base is poured into a dome-shaped mold, which is how it got its name. Thanks to this term, many desserts that have a dome shape are called bombes.

Parfaits are characterized by their airy, porous texture and richness, both a factor of the addition of egg yolk foam.

A bombe, a reference to both a frozen dessert and a shape, contains a high percentage of heavy cream and is molded into a demi-sphere shape.

Semifreddos combine all three foams, giving them a light, "half-frozen" feel on the palate.

Work quickly with frozen mousse to minimize the risk of deflation.

SEMIFREDDO *Semifreddo* is the Italian word for "semi-cold" or "half-cold." It is a partially frozen dessert that is made from all three foams—yolks, whites (French meringue), and whipped heavy cream—plus the addition of flavor typically added in a liquid form, which makes it incredibly light. Even though it is frozen, it gives the impression of not being completely frozen when you taste it, hence the name. It is usually frozen and served in a vessel (cup, glass, bowl), but not necessarily. As with a parfait, it can be frozen into any mold (such as a sheet pan extender or terrine mold), then extracted and portioned into the desired shape and size.

The French equivalent is known as a ***biscuit glacé*** or ice-sponge. In Spanish they are known as *semifríos*.

FROZEN SOUFFLÉ The word *soufflé* is the past participle of the French verb *souffler,* which means "to blow up" or, more loosely, "to puff up." This definition is intended for hot soufflés, which contain an egg white foam that, when baked, puffs up and is very light in texture. Frozen soufflés contain an egg white foam and are made to resemble a hot soufflé. The mixture is placed in a ramekin or soufflé mold, whose height is increased by a band of parchment paper or aluminum foil, and then frozen. Once it is frozen, the band of paper or foil is taken off so that the soufflé rises above the level of the mold, looking like a hot soufflé does when it comes out of the oven.

A frozen soufflé can be made with a combination of foams, such as whipped heavy cream and egg whites or egg yolks and egg whites, but never the three together, and a flavor base, usually a fruit purée or chocolate. A soufflé is distinguished by containing a large proportion of foamed egg whites (French or Italian meringue) in relation to its other components, which will give it a very light texture, even when frozen.

FROZEN MOUSSE *Mousse* is a French term that means "foam" or "froth." A frozen mousse is composed of two foams: either an egg yolk foam and whipped heavy cream, or an egg yolk foam and an egg white foam, plus a flavor base (fruit purée or chocolate). Typically a frozen mousse will contain equal parts of the combined

foams and the flavor base (1:1 ratio), which makes it the densest aerated frozen dessert.

A recipe for mousse that is intended for refrigeration should not be frozen. If you have such a recipe and you want a frozen version of it, you must adjust your ratio of foam to flavor base, as more foam is required for a frozen item in order for it to give you a smooth consistency. Also, don't forget that refrigerated mousses often contain gelatin, which helps the foam remain stable in those temperatures. A frozen mousse does not require gelatin, because once the foam is frozen, the air bubbles will stay in place.

Production Techniques

FOAMING PRINCIPLES OF INGREDIENTS

Heavy Cream

Besides using the freshest possible heavy cream, it is crucial to always keep it very cold (at least 4°C / 39°F or colder, without freezing). This includes the final stage when the heavy cream is actually whipped, or otherwise it will lose its volume. Air is incorporated through whipping, either by hand using a whisk or using a mixer with the whip attachment. As the air is incorporated, the fat molecules (protein) latch on to the interface (or surface) of the bubble. First, the whipping motion physically destabilizes the fat molecules by breaking them down. These broken-down particles either cling to an air bubble's surface or to other broken-down fat molecules, thus creating an even, stable network where the bubbles will not float to the top. These fat molecules reinforce the bubble's surface because they surround it completely, trapping the bubbles. However, excessive whipping will force the fat molecules to continue to gather, forming large clusters of fat that are not capable of clinging to the air bubbles any further, so they escape and the mixture loses volume. With continued whipping, the congealed fat clumps will continue to separate out of the mixture; in a nutshell, this is how butter is made.

Ideally, for still-frozen desserts that require whipped heavy cream, it shouldn't be too stiff. An adequate consistency would be semifirm so that it can be gently folded into another semiliquid ingredient; the ingredients will incorporate much easier when they are of similar (but not identical) consistencies (the whipped cream should be slightly stiffer). When the heavy cream is too stiff, even if it has not been over-whipped, it will crumble and break apart instead of mixing uniformly. This will result in loss of volume, which will have a negative effect on the smooth consistency of the final product.

It is worth repeating that you must *always* keep your heavy cream cold. When whipping small amounts by hand, it is a good idea to place the bowl on top of an ice bath while whipping to

Heavy cream's ability to hold onto air when whipped makes it a great aerator so long as your base remains cold at all times.

ensure that it will stay cold. When whipping larger amounts in a mixer, always whip on medium-high speed so that the time the heavy cream spends out of refrigeration is reduced to a minimum. Once the heavy cream is whipped, return it to the refrigerator, or use it in the desired product right away to prevent volume loss. When it sits at room temperature, the fat globules will begin to soften and will eventually be too weak to keep the air bubbles trapped.

Note: It is a common practice to use heavy cream stabilizers, which are available in liquid and powdered form and are inexpensive. Some pastry chefs do not use them because they believe they impart an unpleasant flavor, or because they believe that if you are a good enough pastry chef, you don't need them. Regardless, these stabilizers will keep heavy cream foamed at the desired volume for long periods of time (as long as the product itself has not started to turn or spoil). When whipping large amounts of heavy cream and producing large amounts of desserts, the stabilizer is a very convenient product because there will be minimal deflation when the foamed heavy cream needs to sit at room temperature while you are portioning your base into a mold for a prolonged period of time (or however long it takes to complete the task). Make sure you check the ingredients in the stabilizer; if it contains sugar or artificial flavorings, you may want to alter your recipe or switch to another brand.

Egg Whites

While heavy cream requires cold temperatures to whip properly, egg whites are best whipped at room temperature or above (60°C / 140°F maximum), without reaching coagulation temperature (62°C / 145°F). The reasoning behind this principle is that the globulin (a protein found in egg whites) is more relaxed at warmer temperatures than when it is cold. Cold egg whites can certainly be foamed to full volume without a hitch, since the whipping action (friction) will warm them up rather quickly, but warmer egg whites will foam much faster. Some chefs like to use older egg whites because they claim

Egg whites can be whipped using a variety of hot or cold methods, yielding a strong, versatile aerator. These egg whites are whipped to stiff peaks.

that they are looser (thinner) and are therefore easier to whip. All eggs are alkaline, especially the egg white portion (at a pH of 8 when they are at peak freshness), and they become more alkaline as they age, but alkalinity is only good is for obtaining volume quickly, not for stability. Increased alkalinity negatively affects the stability of a foam. A fresh egg white will produce a much more stable foam, but it will take longer to reach its maximum volume. When the egg whites are beaten, the globulin proteins, which are tangled in their original state, will unfold easily into strands. These strands group around the interface of the bubble, trapping it. A solid network of protein strands holds water and air in place, evenly suspending the bubbles in the liquid.

The ideal vessel for whipping egg whites is made of copper and silver, because these metals react with the sulfur present in egg whites to form very strong and stable protein bonds very quickly. The downside of using copper is that it can be hard to maintain, because it needs to be specially cleaned after each use. Lemon juice and salt do a beautiful job of cleaning. The bowl should be properly washed before applying the

lemon juice and salt. Once the lemon juice and salt have cleaned the bowl, rinse out with cold water and dry thoroughly. This procedure might need to be repeated before using the bowl again. A good substitute for a copper bowl is adding food-grade copper powder;1 gram/.035 oz per 1,000 grams/2 pounds 3.27 ounces of egg whites yields excellent results. Stainless steel bowls are also recommended and are much more economical. However, the foam will take longer to form because egg whites do not react with stainless steel. Never, *ever* use a plastic bowl to whip egg whites, because the surface of plastic is porous and can harbor debris (and fat), which can hinder foaming significantly (see below). Whatever material you choose, make sure that the bowl will be big enough to hold eight times the volume of the egg whites. If you are whipping by hand, use a balloon whisk or a piano whisk, which will incorporate air much more efficiently than a stiff French whisk.

Cream of tartar and even lemon juice can be used to help stabilize egg white foams. They are both acids that enforce the sulfur and hydrogen bonds that contribute to effective foaming (in egg whites only). When they are not used, the sulfur found in egg whites tends to separate itself from the hydrogen. Acid keeps these bonds together throughout the whipping process. Another effect of acid on proteins is that it promotes coagulation. (Think of what happens when raw fish (a protein) is marinated in lime juice (an acid) to make seviche. The lime juice "cooks" the fish.) After the protein strands unfold because of the agitation from whipping, the cream of tartar coagulates the protein that surrounds the air bubble, trapping it more effectively. Of course, it is a very small amount that is added to the egg white (15 grams/.53 ounces of cream of tartar per 1,000 grams/2 pounds 3.27 ounces of egg whites), and it is added at the beginning of the whipping process. The coagulation effect is minimal, but is sufficient for stabilizing purposes. If too much acid is added, it could flavor the foam, and then the amount of acid could over-coagulate the proteins before they have enough time to unfold and trap air bubbles.

Egg whites are beaten to three different peaks, each one with its own particular stiffness. The stages are soft peak, medium peak, and stiff peak. In order to determine the peak, the whisk or whip that is being used is taken out of the bowl and held upward. The meringue that is at the top of the whisk or whip will show the stage of the peak. At soft peak, the foam retains some of its shape but the peak droops down quickly. At medium peak, the meringue peak will slowly droop down halfway, without drooping all the way down. At stiff peak, the egg whites have increased in volume eightfold from their original volume, and the peak will hold without drooping at all (see photo at left). When egg whites are over-whipped, the proteins are over-coagulated, forming bonds that are too tight, and instead of stabilizing the foam, they squeeze the water out between the bubbles, sending the bubbles up to the surface while the water separates to the bottom of the bowl.

Sometimes egg whites take too long to whip or do not whip at all. The following factors might be the culprits:

- Salt: Salt decreases the foam's stability and prolongs whipping time by weakening protein bonds. Salt needs a place to go too, and lodging itself between protein bonds is just as good a place as any other. But salt in small amounts is necessary for flavor. It will disperse itself very well in the foam; in small amounts it does no harm at all.
- Fat: Fat molecules, from ingredients like oil and egg yolks, hinder proper foaming because they will interfere with egg white proteins while they are trying to latch on to an air bubble. While it is possible to obtain a good foam even with a small amount of egg yolk or other fat present, the whites will take longer to whip and the foam will not be very stable. It will quickly deflate.
- Water: Some water can actually help produce a very good foam because it lightens the viscosity of egg whites, but too much water will dilute the egg whites to the point where the ratio of proteins to water is too small for a good foam (very few proteins to too much water).

- Sugar: Care must be taken to add sugar to egg whites at the right time. If they are added too early (before beginning to whip), the sugar will weigh down the foam and will drastically slow down the foaming process. For specific instructions on how to add sugar to each type of meringue, continue reading.

The combination of sugar and egg whites will result in a meringue, where the typical ratio of sugar to egg whites is 2:1. There are three basic types of meringues: French or Common, Italian, and Swiss. One practice that will create a more stable foam is to add powdered egg whites to the foam. The recommended amount to add is 1 percent of the total weight of the egg whites. Powdered egg whites contain all the protein and none of the water of fresh egg whites. The addition of proteins will create a much more stable foam because there will be more proteins trapping the air bubbles, therefore reinforcing the bubble walls further. It will not affect the flavor or consistency of the meringue. Be careful not to confuse powdered egg whites with meringue powder, which contains large amounts of sugar.

FRENCH OR COMMON MERINGUE (UNCOOKED) The egg whites must be at room temperature when beginning the French meringue. Add cream of tartar and begin whipping at high speed. Once the egg whites have quadrupled in volume, pour the sugar in slowly down the side of the mixing bowl. If the sugar is added all at once, it will deflate the already formed foam and the whipping time will be greatly increased. Some pastry chefs will opt to pour the sugar in when the egg whites are almost done whipping. While this will reduce deflation and whipping time, it will not dissolve the sugar, resulting in a grainy foam that is not very stable. Use a very fine granulated sugar (such as superfine or baker's) so that it can be easily incorporated and quickly dissolved in the egg whites. The larger the sugar crystal, the longer it takes to dissolve.

Check the peak by taking the whip or whisk out of the bowl and standing it upright. If the peak does not move, you have obtained maximum volume. If the peak leans downward, you have not obtained enough volume. Continue to whip until you reach maximum volume. If the foam looks grainy and not smooth, you have over-whipped your egg whites, and at this point there is nothing you can do to fix them. Start over; egg whites are not that expensive.

This meringue is not considered food safe unless pasteurized egg whites are used. Pasteurized egg whites usually contain stabilizers, which make for very good foams, but keep in mind that they whip much faster because of this, and over-whipping can easily occur. For the frozen desserts in this book that contain a French meringue, always use pasteurized egg whites.

A combination of sugars can also be used to make French meringue. You can make a meringue that is one part egg whites, one part granulated sugar, and one part confectioners' sugar. The confectioners' sugar needs to be sifted and should be added once the egg whites have been whipped with the granulated sugar to stiff peaks, since granulated sugar takes longer to dissolve into the egg whites and confectioners' sugar will dissolve almost on contact. Confectioners' sugar is a great stabilizer, but it won't produce very good results if this meringue is used for any other purpose than to make crisp meringues in the oven. Since 3 percent of the total weight of the sugar is cornstarch, which is added to keep the sugar's very fine crystals from absorbing too much moisture from the environment, French meringues with confectioners' sugar will make the frozen dessert taste mealy because you taste the uncooked starch.

French meringues are usually added to another ingredient (e.g., soufflés, French macarons), but they can also be dried in the oven to obtain a crisp meringue, or even poached or steamed (e.g. floating island).

ITALIAN MERINGUE (COOKED) Italian meringue can be the most complicated of meringues to produce. It consists of cooking sugar to 121°C / 250°F, or the "soft ball" stage, using the wet method (combining the sugar in a pot

with enough water to moisten all the sugar to obtain the consistency of wet sand). While the sugar is reaching the soft-ball stage, room-temperature egg whites and cream of tartar need to be whipped to the stiff-peak stage. When the sugar is at the right temperature and the egg whites have reached their maximum volume (stiff peaks), the sugar syrup is poured down the side of the bowl as the egg whites continue to whip. Once all of the sugar is incorporated, the mixture needs to continue to whip until it has cooled down to room temperature. This meringue is considered to be pasteurized because the heat from the sugar will eliminate any bacteria. It is also a very stable meringue because the heat from the sugar coagulates the proteins in the egg whites, which traps the air bubbles almost immediately. Remember that coagulated proteins will keep the air bubbles trapped better than "soft" proteins.

The tricky part is coordinating the cooking of the sugar with the whipping of the egg whites. No matter how experienced you are, it is almost impossible to do so. But there are ways of controlling both the cooking sugar and the whipping egg whites. Begin whipping the egg whites on medium speed at the same time you start cooking your sugar. Have an ice bath ready. It should be big enough to comfortably fit the pot in which you are cooking the sugar. When your sugar has reached 115°C / 240°F, increase the speed of the mixer to high. When the sugar reaches 121°C / 250°F, take the pot off the heat and shock it in the ice bath. This will keep the sugar at a liquid consistency, but cooking will be stopped. Wait for your egg whites to reach stiff peaks and immediately pour the sugar down the side of the bowl and whip until the foam has cooled to room temperature.

This meringue has many uses, from straightforward crisp meringues to marshmallows and, more important for us, parfaits. The only inconvenience when it comes to an Italian meringue is not really an inconvenience, it is merely the fact that it is more technically advanced than other meringues and it takes a few tries to get it right; for the same reason, it is really easy to make a mistake. Typically a foam that has gone wrong is impossible to fix and you will need to start over again.

SWISS MERINGUE (COOKED) Swiss meringue is simply a cooked French meringue. It consists of combining sugar, egg whites, and cream of tartar in a mixing bowl, and then placing this bowl over a hot water bath. The mixture is constantly whisked until it reaches a temperature between 57°C / 135°F and 60°C / 140°F. Do not exceed 60°C / 140°F to prevent over-coagulating the egg whites (remember that egg white proteins cook at 62°C / 145°F), but do not stop at a temperature lower than 57°C / 135°F, because bacteria will not die below those temperatures, and part of the purpose of cooking egg whites like this is to pasteurize them. Of course, if you are using pasteurized egg whites you do not need to worry about bacteria, just overcooking. If using pasteurized egg whites, heat them to 60°C / 140°F, which will warm up the egg whites and dissolve the sugar at the same time.

The meringue can be taken off the heat once the sugar has dissolved and the desired temperature has been reached. Some pastry chefs opt to whip the foam directly over the hot water bath until it reaches stiff peaks. That is a good idea if you are making very small amounts, but for larger amounts it is more efficient to finish the whipping process in a mixer. This way it will whip to stiff peaks and cool down much faster.

This meringue is food safe, and it can be added to other ingredients or dried in the oven to obtain a crisp meringue.

MERINGUE WEEPING Meringue weeping is characterized by small droplets of water that accumulate on the surface of the meringue. Weeping is caused by over- or under-whipping the egg whites and by the sugar not having been completely dissolved into the egg whites. This weeping is seen only when baking plain meringues of any kind (French, Italian, Swiss), and it can be triggered by high oven temperatures. For this reason weeping will not be evident in a

meringue that will not be baked. Weeping will also make the meringue crack while it bakes (or dries) in an oven.

Egg Yolks

Yolks, because of their high fat content, take longer to whip than whites and will not gain a significant increase in volume. They might whip up to four times their original volume, but only if there is a liquid, such as water, added or if they are whipped over a hot water bath. It is almost impossible to over-whip egg yolks, because, although they have a large amount of proteins, egg yolks lack the water content that egg whites have (by about half) and their proteins are very tightly bound to each other. Whipping alone will not make enough of the proteins unfold (as happens when whipping whites) and trap air bubbles efficiently. When a liquid is added, it makes the proteins lighter and helps untangle them, so they will trap air bubbles easily. However, if heat is not applied, this foam will collapse quickly. Therefore, whip the egg yolks over a hot water bath, and as the air is trapped in the water by the yolk's proteins, the heat will help coagulate these proteins around the bubbles, creating a stable foam. When yolks are whipped without the addition of a liquid and indirect heat (hot water bath), their volume will increase by only two to three times their original volume. Be sure to never stop whisking your egg yolks when they are cooking over a hot water bath. Otherwise they will coagulate in large clusters around the rim of the bowl and will not result in a very smooth finished product. Having one of those chunky clusters in your mouth is very unpleasant. Think hard-boiled eggs, which are fine when you know what to expect, but are definitely not what you want when you eat a semifreddo.

Egg yolks, whipped to a ribbon stage, aerate still-frozen desserts.

Recipes from frozen desserts to sponge cakes like génoise might call for whipping egg yolks to the ribbon stage. The ribbon stage occurs when, after whipping egg yolks for a few minutes on high speed, they take on a pale yellow color due to the influx of air and are thick enough to form a strand that resembles a ribbon when poured (see photo at left). Patience is necessary, since obtaining a foam from egg yolks will take much longer than obtaining one from whites; always whip egg yolks at high speed.

Many frozen desserts call for a *pâte à bombe,* which is an egg yolk foam base to which a flavor (such as chocolate or a fruit purée) and another foam (such as egg whites or heavy cream) are added. When whipping egg yolks for a pâte à bombe, there will be an amount of granulated sugar added, either raw or cooked. If the mixture uses raw sugar, the sugar can be combined with the egg yolks right before the whipping begins, because yolks are not as finicky as egg whites. If it uses cooked sugar, the egg yolks should be whipped on high speed while the sugar cooks to 115°C / 239°F. Once the yolks start turning a pale yellow and have tripled in volume, pour the hot sugar down the side of the bowl and continue whipping until the egg

yolks quadruple in volume and form a ribbon. In this case, cooking the egg yolks over a hot water bath is not necessary to obtain more volume from the foam, since the hot sugar that is being added will serve the same purpose. The heat from the sugar will help the egg yolks trap air and increase their volume, plus it will pasteurize them. The ratio for ***pâte à bombe*** is 40 percent sugar, 60 percent egg yolks. If this foam is to be consumed raw (always in combination with another ingredient), make sure that the egg yolks are pasteurized. When using pasteurized egg yolks, make sure you check the ingredients they contain, because most of the time there will be sugar added and you will have to modify your recipe.

Egg white meringues can be eaten as crisp meringues, where all that is needed is sugar and egg whites, but a foam made from yolks and sugar is never eaten on its own. It will always be combined with other ingredients, and you must always make sure to cool your cooked egg foam to room temperature or below. For example, if you are folding it into whipped heavy cream, it will soften the fat molecules that are trapping the air bubbles, resulting in a large decrease in volume. Foamed egg yolks add a very smooth consistency to still-frozen desserts not only because they are foamed, but also because of their high fat content. Do not confuse what egg yolks do for aerated frozen desserts with what they do for custard-base ice creams; they are completely different applications. In ice cream they act as emulsifiers, and in aerated frozen desserts they act as one of the aerated ingredients that contribute to the final texture and body of the finished product.

Folding

Besides obtaining a proper foam, a crucial step in the preparation is folding the foam properly into the flavor base so that it becomes a homogenous mass with the least amount of volume loss. There will necessarily be some volume loss, but how much depends on how well you fold the foam into the flavor base.

Proper folding procedure

1. As soon as the foam has reached the desired volume, it should be folded into the remaining ingredients. Do not wait to fold in the foam, because even though it might be stable enough for a few minutes, you want to take advantage of the maximum volume you have obtained. The longer the foam sits, the more it will deflate, even if it doesn't seem perceptible.
2. Place half of the foam on top of the flavor base. Using a rubber spatula or bowl scraper, scrape down the side of the bowl all the way down to the bottom and then bring the spatula up through the center of the bowl as you curve your hand upward. The motion will resemble the letter J. At the same time, spin the bowl a quarter turn toward you with your free hand every time your other hand performs the J motion. This will maximize the amount of the foam that is folded into the flavor base and will result in the least amount of deflation. It is more effective than if you didn't turn the bowl. You have to be well coordinated to perform this action correctly, but practice helps.
3. Perform the same folding motion with the remaining foam. The foam is incorporated in two additions because if you try to fold in all the foam at once, there will be a more significant amount of air knocked out by the time all the ingredients are incorporated. By doing it in two additions, the base loosens up with the first addition, and the second addition will incorporate with greater ease.
4. Finally, portion the finished product into the desired mold(s) and freeze.

Some recipes contain two or three foams, and many pastry shops are not fortunate enough to own two, let alone three, mixers. Ideally you would make all of your foams at the same time and fold them into each other as soon as they have reached full volume. If you only have one mixer (or, perish the thought, none), start by foaming the most stable foam, which is the heavy cream foam, and refrigerate it immediately once you have obtained the desired volume in order to maintain its volume. Next, whip the egg yolks and, finally, the egg whites. Always fold the lightest ingredient into the heaviest (egg whites into egg yolks, then whipped cream into the previous mix or whipped cream into egg yolks).

NOTE: If the recipe contains chocolate, it must be melted and then brought down to room temperature (21°C / 70°F) without getting too cold, because if the recipe requires folding heavy cream into chocolate and the chocolate is too cold, it will harden almost immediately on contact with the cold heavy cream. The result will be chocolate chunks throughout your product instead of a uniform mix.

Fold the aerated base into the remaining ingredients as soon as it is ready, to take advantage of its maximum volume.

Possible Defects for Aerated Still-Frozen Desserts

DEFECT	INDICATOR	CAUSES
Too dense	Textural	Main foam was under- or over-whipped. Components were folded in too far, to the point that all the air was knocked out.
Streaks	Visual and textural—looks like marble	Components were not folded in all the way and there is not a homogenous mix.
Visible gelatin particles throughout	Visual and textural	Gelatin was not completely melted before combining with other ingredients. Gelatin was added to a cold component (such as whipped cream) very slowly and it set on contact.
Icy	Visual and textural	Frozen item was left uncovered and condensation accumulated on the item's surface, turning into ice—this can also cause the dessert to have a dried-out look when the ice around it thaws.

Reserving and Use During Service

While aerated still-frozen desserts have a longer shelf life than machine-churned and pacotized frozen desserts (approximately 72 hours in a –10°C / 14°F freezer), it is important to take the necessary steps to prevent freezer burn, frost formation, and "freezer taste." Keep these items covered at all times. It's a good idea to keep them in a parchment paper–lined hotel pan with a Lexan plastic cover that must be kept on at all times (except, of course, when it is time to plate them). Depending on how many covers your establishment serves every day, break down the finished products into groups of ten, maximum. This way, the remaining desserts will be kept covered for a longer period of time, and exposure to higher temperatures, moisture, and condensation (which will result in frost formation directly on the dessert) will be significantly reduced.

Temper the desserts for at least 5 to 7 minutes before serving them, so that they will still be frozen, but easier to eat and cut with a fork or spoon, and any frost that may have formed on the surface will melt.

These desserts are almost always finished ahead of time. Compared to machine-churned or pacotized frozen desserts, which need to be scooped (or, better, quenelled) *à la minute,* these are 95 percent ready to go by the time you are ready to plate; all you need to add is the garnish (if desired). And melting is not a tremendous concern, because aerated still-frozen desserts will hold their shape for much longer than an ice cream or sorbet would, even those that contain stabilizers. They don't puddle when they thaw, and they can melt completely and still hold their shape thanks to their very stable foams. They may not be frozen, but they will hold their shape.

Notes on aerated still-frozen desserts and the recipes in this book:

- They are all manufactured and used within generally accepted definitions and techniques (based on their original definitions).
- They are determined by their ingredients and not the vessels in which they are traditionally frozen. A frozen soufflé may be used as an insert in an entremet; a parfait may be cut out of a frame and plated as a "stand-alone" dessert.
- Whenever the recipe contains egg yolks, egg whites, or heavy cream, they will always require foaming. They are never used in their liquid state.
- The preferred peak for heavy cream is medium-stiff. Stiff peaks are not recommended since they may not incorporate smoothly with other ingredients because they are too stiff. And because of the excessive folding required to obtain a homogenous mass, the foam will deflate and lose significant volume.
- Remember to review the proper foaming procedures on page 91, as well as the specific foaming methods for each type of ingredient (egg yolks, egg whites, and heavy cream) before you proceed with a recipe. Understand the methods and the reasoning behind what makes them work (or not work).
- If a recipe calls for chocolate, it will always be melted and incorporated with a foam when the chocolate is at room temperature.

Aerated still-frozen desserts are excellent for entremets (as the main body or as an insert), for a few reasons:

- They do not need to be churned to be piped into an entremet or insert mold.
- They are more fluid than an ice cream or sorbet, so air pocket formation inside the entremet mold is easier to control.
- They stand up better to heat shock.

chapter seven Finished Items

THIS CHAPTER IS A COLLECTION OF SOME OF MY FAVORITE RECIPES, not only for frozen desserts, but also for the other components that are served with them. Mix and match these components as you see fit, but don't forget that while some flavors marry well together, others won't, so use your better judgment. When in doubt, just ask yourself: "Would I eat this?" "Will my customers like this?" "Would I pay for this?" Always stick to what you like and be honest with yourself.

These recipes have been tested and used in restaurant situations and they work very well. In order for them to work for you, please make sure to read the recipe and instructions before you get started. They are meant for real-world scenarios, and they include all of the information that you will need to produce these items successfully.

Finally, don't forget to use the highest-quality ingredients you can find (and afford); you owe it to your customers.

A Few Thoughts on Dessert

First and foremost, with desserts, as with any other food, taste should be the primary concern. However, visual appeal is a not-too-distant second. First impressions are very important because you see first, then you taste. If it looks good and it tastes good, you've hit a home run. A good dessert is a fine balance of flavor, texture, temperature, color, and composition, but not always in that order.

Genius, as Thomas A. Edison said, is 1 percent inspiration and 99 percent perspiration. If the idea is good but the execution is not, there goes the idea. Here, execution translates to technique. Knowing how things are done, the ingredients you will use, and the necessary equipment is key to a successful result. It is at this point that many pastry chefs and pastry cooks can fail. The importance of technique and execution cannot be stressed enough. The simplest things, the ones we might take for granted, such as whipping heavy cream properly, are just as important as the most complicated tasks, like making a properly balanced ice cream. Know what you are doing before you do it.

As far as taste, my suggestion is to make what you like to eat, but know how to make those items you do not like to eat as well, because you never know. Personal taste is something that begins at childhood, is acquired through many years, and never ends. It should evolve, and you should be open to new flavors, techniques, and ideas. Flavor profiles don't always have to be traditional, like coffee and chocolate, but there are some out there that are, for lack of a better word, unusual. There is a big difference between innovation and shock value, and everyone hopes you will be able to tell them apart before you start serving sea urchin ice cream on a bed of gummy bears, or calling melted ice cream "hot ice cream" (it did happen). It is great what Albert Adrià does for the industry, but I will let him and his brother Ferran do it. There are only so many people who can pull that off, and they are among them. Their restaurant, El Bulli, works because they were the first with many innovations that actually worked and did something to further gastronomy, and I hope that will continue for a long time. (Note: Albert Adrià is not the author of the above-mentioned sea urchin ice cream, nor the hot ice cream.) There are many imitators of the Adrià brothers. I must admit that I have tried many of their recipes for fun, such as the "Apple Caviar," but trying to replicate that on my own menu would make it seem like I want to be like them and not my own pastry chef. Remember that everything has been done in one way or another, meaning that everything comes from something or somewhere. But still, as with clothing, you can create your own style. You know what you like to wear and what you don't; it's the same with food.

The following points are general guidelines that have worked for me (in no particular order), though they are by no means written in stone:

- Flavor first, visual appeal close behind. Keep texture, temperature, and composition in mind.
- Be aware of your environment and commit to using seasonal ingredients as often as possible. Try to support local farmers and purveyors as long as their products have high-quality standards.
- Know the ingredients and how they interact with each other.
- Always use the highest-quality ingredients possible. Don't forget that you have a tremendous responsibility to your customers.
- Understand culinary techniques as well as pastry techniques. It will give you a broader understanding of food.
- Knowledge of technique and execution are crucial to successful results.

- Bells and whistles don't make the dessert, they only distract. Streamline your food.
- Simple, clean, and polished desserts are hard to achieve, but are often the best.
- The less you manipulate ingredients, the better. You can always tell when too many fingers have touched your food.
- Work clean, work fast, and work efficiently. Clean as you go. A messy kitchen is the reflection of a messy mind.
- Learn from the masters first, then create your own style. Imitation is not very well regarded.
- Dessert is typically served at the end of a meal, and people are not hungry by the time dessert comes around. Small is good in this case. Customers should leave feeling satisfied, not sick.
- Always be willing to learn. There is always room for knowledge. I am the first to admit that I don't know everything. If I did, why would I go on?
- Not all desserts need a frozen component, though it is always a good idea to offer a variety of frozen items.
- Keep in mind that the tongue can identify only three to four flavors at a time.
- Respect your customers. Don't serve anything you wouldn't eat yourself.

There are three recipes in this book for which I give credit to the chef who inspired them (Granny Smith Apple and Wasabi Frappé, see page 175; Coconut Bubbles, see page 275; and Paprika Bubbles, see page 346). I gave these items my own interpretation, but out of fairness I felt obligated to give credit where it was due.

Small Desserts

These are also referred to as pre-desserts, but that only applies if there will be an actual dessert after it. There is no set weight for small desserts, except that they should be small, and this is really up to the chef. They should have fewer components than a larger portion would because simplicity is key. Small desserts open a whole new possibility. People who are serious about food will want to taste as much as possible and experience many different items. Small portions allow for a broader experience, but they are also challenging since there is very little with which to work. A talented pastry chef will see this as an opportunity to show off his technique and knowledge of flavor. It is not recommended to have more than three or four components per small dessert.

It is a good idea to present these small desserts one at a time, but if you choose to do two, three, or four simultaneously, make sure that their integrity won't suffer by the time the customer gets to the last one. Talk to your wait staff about suggesting the order in which the desserts should be consumed to your customers. For example, should there be a soufflé in one dessert and an ice cream in another, the challenge is to keep the soufflé from falling or the ice cream from melting. I would use an ice cream with stabilizers and suggest that the dessert with the soufflé be eaten first and the ice cream second, since there is no way to keep a soufflé from falling, but you can delay the ice cream from melting if it has a percentage of stabilizers. Once again, knowledge of ingredients and the finished product will work in your favor.

Plated Desserts

Dessert is frequently your customers' last impression. If it is done well, it will be a memorable experience. If it isn't, it can be detrimental to the entire dining experience, so the responsibility of the pastry chef is huge. I have often read restaurant reviews that said, "everything was going great until we had dessert." Now, in all fairness, not every restaurant has a pastry staff, let alone a pastry chef, and it is often left to one of the other cooks to make the desserts, besides having to work on his own mise en place. Occasionally the wait staff will be responsible for plating desserts, which to me is one of the best ways to ensure inconsistency. I can understand that paying a pastry chef's salary may be cost-prohibitive in some restaurants, but it is still no excuse to deliver a poorly made dessert. Again, it all comes down to respect for yourself and your customers.

The most important factor when constructing a dessert will always be taste/flavor. You might be inspired by the beautiful bright green color of a pistachio, and through experience you deduce that pistachio goes very well with stone fruits, such as cherries. So far you have two quite distinct flavors that harmonize well. But you also have two colors that are intense and look good together. The next factor to consider is texture. You can get crunch from toasted pistachios and a smooth consistency from cherries. Can I make an ice cream from the pistachios and sprinkle some candied pistachios on it? Then you consider other factors, such as temperature. Could those cherries be cooked and served warm? Is there anything else missing here, or could these ingredients live alone? Or the thought process can be reversed. You want to have a hot and cold dessert on the menu, cherries are in season . . . you get the picture. It comes down to experience and understanding what makes sense and what doesn't, what you like or dislike, and what your customers prefer. There should be as much diversity on the menu as possible, and by this I don't mean that there should be many components, but a variety of textures and temperatures. Once you understand the possibilities that make sense in your establishment, the menu development thought process becomes second nature.

One of the important considerations is that the portion size of the desserts should be just enough, and preferably on the small side. There is a fine line, then, between small desserts and actual desserts. What qualifies as too little and what is too much? Who are you to decide? There is no predetermined weight or amount that constitutes a small portion or a large portion, but there is such a thing as common sense. If you see empty plates coming back from the dining room consistently, that is a good sign. If not, there are two possibilities: either your customers did not like the dessert, or it was too big. It is good practice to get feedback from your customers via the wait staff. "They just didn't like it" just doesn't cut it. Try to get as much information as possible. If there is a significant number of customers who are making the same comments (too sweet, too bland, too much), make the

necessary adjustments quickly. If one person didn't like your dessert, remember that you can't please everyone all the time, no matter how good you are. Your best customers are the ones who tell you what you did wrong in an objective way ("The ice cream was too icy," for example, as opposed to, "I just don't like bananas"), so you can fix it. The worst customer is the one who identified many flaws in your food, paid his bill, and left without telling you a word, leaving you to make the same mistake over and over again. But—guess what?—he is a potential customer who will never return, he will tell other people about the horrible dessert he had at your restaurant, and chances are that the people he tells won't be visiting anytime soon.

Entremets

An entremet is, simply put, a cake. It is built from a variety of components, which usually include a cake portion, the body (which can be more than one component), a coating, and a garnish. Entremets differ from plated desserts in that entremets have all the components assembled in one mold or frame, whereas plated desserts have separate components that are gathered on a plate just before serving.

One of the most crucial considerations for entremets is texture. They should not be served right out of the freezer because they will be too hard to cut and, most important, too hard to eat. Always temper them for at least 10 and up to 15 minutes for ideal texture. Using ice creams, gelatos, or sorbets with stabilizers to assemble entremets will preserve a better, smoother texture in the finished product. Entremets made with items produced through the classic method are highly likely to become icy and will take too long to temper. The smooth texture will just not be there. Another good reason to use bases with stabilizers is that the time it takes to assemble them alone will be cutting into the ideal holding time (18 hours or 2 services). By using stabilizers, you can extend the entremet's shelf life to 24 or 36 hours maximum.

Assembly can be challenging, since all of the components have to be at the right consistency. Inserts (the components that go inside the entremet) have to be hard enough to hold their shape when they are being handled. If a disk of ice cream is too soft, it will lose its shape when it is being put inside the entremet. In pastry competitions, when the judges cut through an entremet they want to see even, perfect layers. This denotes knowledge of technique and proper execution, which translates into properly made and handled components, which in turn results in a pleasant texture and visually appealing entremet. The surrounding element, or the exterior component, must be smooth in order to be poured or piped into the entremet mold. Judges don't want to see air pockets, either. Piping the exterior component into the mold will help to prevent air pocket formation. When piping, make sure that the tip of the piping bag is inside the piped product when dispensing it into the mold; this will prevent the formation of air pockets even further. A smooth surface and even, streamlined inserts are two of the main objectives (besides taste and texture).

ENTREMET GENERAL ASSEMBLY GUIDELINES

Entremets are typically assembled upside down, meaning that the cake portion, which is the base of the entremet, is the last thing to put on while assembling the entremets.

The "body" of the entremet is typically the main flavor/component, since it will hold all of the other components together; therefore it is the first item to be piped into the mold. The mold, as well as the sheet pan that will be used hold the entremet mold, should be frozen before piping anything into them, to prevent melting.

After piping some of the main component in, other components, called "inserts," are placed throughout the body. Special attention should be paid to prevent air pockets from forming.

Entremets are assembled upside down in layers, starting from the outer layer and working in toward the center and base.

Once completely assembled and fully hardened, remove the entremet from its mold and keep it frozen until ready for garnish and service.

An entremet's layered composition presents myriad possibilities for creativity when combining flavors and textures.

The cake (or sponge) is the last layer. It should be pressed down so that it is lined up with the border of the mold. This sponge is usually coated with a thin layer of chocolate to prevent it from sticking to the cake board. At this point the entremet is hardened in the freezer.

Once it has hardened it is taken out of the mold by applying heat, either a hot water bath or a torch. It needs to be re-frozen for a few minutes, and then it is coated by a glaze or chocolate spray.

Finally, it is garnished. Use garnishes that are resistant to freezing and condensation, such as chocolate.

Once the entremet is assembled and sufficiently hardened, it will be necessary to take it out of its mold. Stainless steel molds are widely used, and there are various methods for taking them off. For dome-shaped molds, dip the mold inside a hot water bath all the way up to the rim of the dome, without getting any water on the surface. The trick is to leave it in the water for just the right amount of time so that it comes out clean. Then place a cake board at the base of the cake, turn the dome over, and push one side of the base of the dome while holding the opposite side with your other hand on top of the dome in a circular motion, following the shape of the dome so it comes out clean and smooth. If it melts too much, the surface of the dome will look like wrinkled paper, and when it re-freezes it will become very icy because the previously melted exterior has lost its smoothness. With any other mold that is a frame-type mold (like a regular cake ring), you need to use a torch to take the mold off. And here the same trick is to give it the right amount of heat that will be just enough to slide the mold right off and avoid melting it too much. Fleximolds work very well because they do not require the application of heat for unmolding; they just peel off. However, one defect that occurs is that the borders aren't very straight (they seem to curve too much), and so the final look is not very polished. There are also plastic molds that have very nice designs but have very short life spans, meaning that they easily crack or lose their shape when they are washed with very hot water.

If the entremets are to be coated with a glaze or sprayed with chocolate, it is not only to embellish them but also to protect the integrity of the exterior. If you think about it, a glaze will

likely have an ingredient similar to those used to stabilize frozen desserts, such as gelatin or pectin, which will keep it smooth even when frozen. These ingredients also set quickly when they come in contact with cold temperatures, so it is important to work quickly and to have the glaze at the right temperature, which depends on the nature of the glaze and its gelling agent. Some glazes are ideally poured at 35°C / 95°F, such as the Shiny Chocolate Glaze on page 200, and others at cooler temperatures, like the Caramel Glaze on page 220, which is poured at 19°C / 66°F to 20°C / 68°F. To obtain an even coating, pour the glaze directly at the center of the cake and let it puddle naturally onto the cake. Occasionally it will be necessary to pour the glaze in a spiral motion if the cake has an uneven surface or if it is concave or too large and the glaze will stay in a puddle at the center of the cake. A funnel, pitcher, or ladle is ideal for pouring glaze.

When tempering an entremet that has a coating of chocolate spray, it is important to let it temper not only for textural considerations but also because the very visible frost that will accumulate on its surface is not very attractive. Tempering resolves this issue.

As far as garnishing, make sure it is a garnish that can be easily cut through when portioning. If this entremet is sold at a café or pastry shop, put one finished entremet on display, and if one is ordered it can be garnished at the last minute. In a restaurant environment, it can be garnished minutes before it is served (ideally while it is tempering). Chocolate tends to crack (or shatter) easily when cut, but *pâte à glacer* (a chocolate product with a higher percentage of cocoa butter) cuts much more cleanly since it has a higher fat content. Always use edible garnishes or make sure to inform your customers that the beautiful piece of star anise and the whole vanilla pod are for visual appeal only. While I concede that edible garnishes are ideal, the benefit of non-edible garnishes is that they can easily be taken off the entremet before portioning, and it will therefore be easier to cut if nothing (such as a chocolate plaque) is in the way. It is a good idea to put a garnish on the entremet that will reflect its contents; for example, if there is coconut ice cream inside, place a thin stripe of shredded coconut on the entremet. This will not always be possible, though, since some garnishing ingredients are not recommended for freezing, such as fresh fruit or cooked sugar.

An interesting aspect of entremets is the possibility of combining a variety of frozen desserts in one place. Churned or pacotized items such as ice cream, sorbet, sherbet, and gelato can be combined with still-frozen items, such as mousses, parfaits, and semifreddos (see pages 312-321 for entremet recipes). This opens up many possibilities for the finished product, but try not to use more than three different types of frozen items in a single entremet because, after that point, the flavors won't be very distinguishable. There is always the possibility of making many different frozen components of a single flavor, such as a tangerine ice cream, sorbet, frozen soufflé, and granité. This would present the tangerine's flavor in a variety of textures and provide a great dessert experience without being overkill.

When cutting entremets, use a sharp, thin, and long slicing knife. Dip it in a hot water bath that is deep enough to surround the entire blade with water. Wipe the knife dry with a paper towel and slowly cut through the entremet. Repeat these steps before each cut. And make sure the entremet is tempered, because if it is too hard, when you cut through it, it will have a crumbled look, as opposed to a more visually appealing smooth surface.

Savory Items

While some might consider a frozen item in a savory preparation absurd, this approach has become increasingly popular on many menus. There really is no written rule about savory items with a frozen component, but try to keep the portion small. It should be an amuse-gueule or a small course between larger courses, almost like a palate cleanser but more interesting. 20 g / .71 oz is the size of scoop or quenelle that is recommended. The frozen component shouldn't overwhelm the other items it is served with, it should enhance them.

In this book, most of the frozen components (ice cream, sorbet, or granité) intended for savory preparations have had their sugar percentages considerably dropped so that they aren't as sweet as they would be for a dessert. It is because of this that using a Pacojet is recommended in order to obtain a very smooth product. Remember that sugar depresses the freezing point of frozen items and is responsible for ice crystal formation (the more sugar, the smaller the ice crystal; the less sugar, the larger the ice crystal . . . think of granités). Other savory items have been kept sweet because it is the nature of that ingredient to be sweet, such as beets (see recipe on page 383). Be careful; there is a lot of opportunity here to get wacky.

Important Aspects to Consider During Service

Although the following are mentioned throughout this book, here is a brief recap on key points.

HOLDING AND STORING:

- All frozen items should be held at –10°C / 14°F, except for granites and ices, which should be held at –18°C / 0°F.
- Keep them covered. If they are still-frozen items, keep them in an airtight container. If they are churned or pacotized, keep them covered with a plastic lid or stainless steel lid.
- Minimize the time the freezer door stays open to prevent heat shock on your frozen items.
- Do not hold ice creams, sorbets, sherbets, and gelatos for more than 18 hours (2 services) for optimal quality.
- Still-frozen desserts, if properly stored, will hold for 3 to 4 days.

FINISHING (PLATING):

- Develop a sense of urgency for service. Urgency doesn't translate into serving slop for the sake of expediting quickly.
- Use a warm scooping utensil to get a clean scoop or quenelle.
- Make sure that you hold your scoops in hot running water (above 62°C / 145°F) for sanitary purposes and to obtain clean scoops or quenelles.
- Always use cool plates. Refrigerated or frozen plates will develop condensation on the surface, which affects the look. It literally looks like what it is, a plate right out of the refrigerator.
- Quenelles and scoops typically need to be anchored down to a plate to keep them from sliding around. Use a flavor or ingredient that makes sense with the flavor of the quenelle and the rest of the dessert (like cocoa nibs for chocolate ice cream).
- As soon as a quenelle goes onto the plate, make it fly out of the kitchen. It should be the last item to go on the plate, unless there is a garnish that goes on top of it.
- Most food tastes better if it's not too cold. Consider the items on your dessert that can be reserved at room temperature during service without becoming a health hazard.
- Always temper still-frozen items for 3 to 5 minutes before serving so they will be frozen but easy to eat. Torch them for 2 to 3 seconds

to get rid of the frost that might cover the dessert (do not torch if the dessert is covered in chocolate spray, otherwise it will melt). It is always better to have the customer wait for a few minutes for the dessert to reach its ideal consistency than to serve them a rock hard product.

- Temper frozen entremets for 10 to 15 minutes before serving. Test the cakes to see if they are ready to serve by sliding a long, thin pin through them. If it slides in easily, it is ready to serve.
- Always make sure that your work surfaces are clean. The visible side of the plate may be clean, but if the base of the plate is not, it will leave a smudge on the tablecloth after the plate has been cleared. It can leave a bad impression on the customer.

Remember: every single detail counts. As small as they may be, they all add up. While most customers can be forgiving of little things here and there, you do not want to depend on that. Make sure that there is no room for mistakes.

Plating Variations

Most of the items photographed in this book are intentionally not presented on plates. They are presented on a variety of surfaces such as glass, Lucite, acrylic, marble, stainless steel, slate, and ice. Some of them are plated in a bowl because the nature of the dessert dictates it. This is so the items can shine on their own with a little help from a surface that might enhance their visual appeal, but also because it should be up to the reader to decide what plate to use. Whatever you decide, keep in mind that the vessel you use is half of the appeal of the finished product. If you use cheap plates with unappealing colors, this will certainly reflect on your dessert.

The possibilities aren't limited to white china. Use your creativity to come up with alternative surfaces if you can and if your budget allows. Just keep in mind that the surface should be food-safe, meaning that there will be no chemical reaction between the food and the material it is plated on. Wood is a nice alternative to metal, porcelain, and glass, but make sure it is food-safe and nonporous, because it is very hard to clean wood properly and it can become a potential health hazard.

You can also think of variations within the items in this book. Some components in one item might go well with other components in a different item, and the way they are plated is merely a guideline or suggestion. You should be inspired by this book, and also to become your own pastry chef by developing your own style. Don't worry, developing your own style will take a few years, but you have to start somewhere.

SMALL DESSERTS

Caramelized Banana Ice Cream with Hot Malt Shake

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz HOT MALT SHAKE

300 g / 10.58 oz BANANA ICE CREAM BASE (page 352), churned into a piping bag and reserved frozen

10 g / .35 oz malt powder

ASSEMBLY

1. Fill a 60 ml / 2 fl oz glass halfway with hot malt shake (30 g / 1.06 oz).
2. Pipe 30 g / 1.06 oz of the banana ice cream on top of the hot malt shake.
3. Garnish with a pinch of malt powder (about 1 g / .04 oz).
4. Serve immediately.

Hot Malt Shake

YIELD 500 G / 1 LB 1.64 OZ

451 g / 15.91 oz milk

49 g / 1.73 oz malt powder

1. Bring the milk to a boil over medium heat.
2. Whisk in the malt powder and mix until dissolved.
3. Serve immediately or reserve in an insulated thermal container until needed. Depending on the quality of the container, the liquid will remain hot anywhere from 2 to 6 hours.

Buttermilk Sherbet and Concord Grape Soup

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz CONCORD GRAPE SOUP

300 g / 10.58 oz BUTTERMILK SHERBET (page 396)

ASSEMBLY

1. Portion 50 g / 1.76 oz of chilled soup into a small tourine or glass pitcher.
2. Place a medium quenelle (30 g / 1.06 oz) of the sherbet in the center of a soup bowl. Anchor the sorbet so it doesn't slide around the bowl. Crumbled shortbread cookies or sablés work well as an anchor. Use only a very small amount of crumbs, just enough so that the quenelle will stay in place but they will not be visible. They are not part of the dessert.
3. Once the bowl is placed in front of the customer, pour the soup into the bowl, making sure to pour down the side and close to the base of the bowl so as not to splatter.

Concord Grape Soup

YIELD 2 KG / 4 LB 6.55 OZ

3 kg / 6 lb 9.82 oz Concord grapes

880 g / 1 lb 15.04 oz simple syrup (50° Brix), or as needed

1. Separate the grapes from the stems.
2. Place the grapes in a pot and add 400 g / 14.11 oz of water; cook over medium-high heat until the grapes burst and release their juice.
3. Push the grapes through a sieve so as to obtain as much liquid and pulp as possible while removing the seeds and skin.
4. Measure out 1.12 kg / 2 lb 7.5 oz of juice and add the simple syrup as needed.
5. Reserve under refrigeration until needed for up to 3 days.

NOTE This dessert is an exercise in visual simplicity in which the delicate balance of flavors (sweet and tart), temperatures (cold and frozen), and textures (smooth and liquid) is showcased, dramatically enhanced by the contrast of deep purple and white.

Passion Fruit Sorbet with Eve's Temptation Tea-Infused Tapioca and Basil Jelly

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz BASIL JELLY RECTANGLES

200 g / 7.05 oz EVE'S TEMPTATION TEA-INFUSED TAPIOCA

300 g / 10.58 oz PASSION FRUIT SORBET (page 380)

ASSEMBLY

1. Place a basil jelly rectangle on a plate, making sure it is as straight as possible, with a small offset spatula. Be careful because they are slippery.
2. Place a 5 cm / 2 in by 7.5 cm / 3 in rectangular mold over the basil jelly, aligning the rectangle with the long side of the mold. Spoon 20 g / .71 oz of the tapioca into it in a single layer right next to the basil jelly.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet and place it diagonally on top of the tapioca.
4. Serve immediately.

Basil Jelly

YIELD APPROXIMATELY 1 KG / 2 LB 3.27 OZ

BLANCHED BASIL

4 L / 1 gal water

10 g / .35 oz ascorbic acid

200 g / 7.05 oz salt

500 g / 1 lb 1.64 oz basil leaves

BASIL JELLY

195 g / 6.88 oz blanched basil

795 g / 1 lb 12 oz water

5 g / .18 oz ascorbic acid

2 g / .07 oz salt

About 150 g / 5.29 oz sugar

4 g / .14 oz agar-agar

1. FOR THE BLANCHED BASIL: Bring the water, ascorbic acid, and salt to a boil in a saucepan. Blanch the basil for 5 to 8 seconds, or until wilted. Make sure that the basil does not lose its color by letting it blanch too long.
2. Shock the basil in ice water and drain. Squeeze the excess water out of the basil.
3. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 2 cm / 1 in Plexiglas or stainless steel frame inside the sheet pan.

4. **FOR THE BASIL JELLY:** Purée 195 g / 6.88 oz of the blanched basil, the water, ascorbic acid, and salt in a blender. Strain. Add sugar as needed; it should be sweet but not too sweet. Stir until the sugar is dissolved.
5. Bring 250 g / 8.82 oz of the basil mixture and the agar-agar to a boil in a saucepan over medium heat. Combine this with the rest of liquid off the heat and pour into the frame immediately. If the basil water sits in the hot pot for too long, it will turn brown.
6. Allow the mixture to set in the refrigerator, about 20 minutes.
7. Cut into rectangles 1 cm / 0.5 in by 7.5 cm / 3 in using a metallic cutter or knife. Slightly separate the jelly rectangles from one another and reserve covered on the nonstick rubber mat in the refrigerator.

Eve's Temptation Tea-Infused Tapioca

YIELD 700 G / 1 LB 8.69 OZ

250 g / 8.82 oz small pearl tapioca

2 kg / 4 lb 6.55 oz Eve's Temptation brewed tea (see Note below)

200 g / 7.05 oz sugar

1. Soak the tapioca overnight in 454 g / 1 lb of water (approximately twice the amount of tapioca). Drain the excess water the next day if necessary.
2. Add the tapioca to a stainless steel pot and cover with cold Eve's Temptation tea. Bring to a simmer. Strain and repeat this process 2 more times, covering the tapioca with fresh cold tea each time, or until the tapioca is cooked through and has a chewy consistency. The tapioca should be completely transparent with no white in the center.
3. Rinse the tapioca in cold water and soak for 5 minutes in enough cold tea to cover. Rinse and soak again in enough cold tea to cover. Drain. Adjust the consistency with tea so that the tapioca is a spoonable consistency. The tapioca pearls tend to stick to each other, which makes them hard to portion and difficult to eat.
4. Add sugar as needed. Remember that it is being served with passion fruit sorbet, which is on the tart side.
5. Refrigerate until ready to use. Adjust the consistency with more tea if necessary. Discard the tapioca after 18 to 24 hrs.

NOTE Remember that even though the recipe calls for 250 g / 8.82 oz of small pearl tapioca, it will yield much more because of the absorption of liquid, about 500 g / 1 lb 1.64 oz. Make sure to brew a large amount of tea in advance (about 4 L / 1.04 gal), because the liquid will be changed several times during cooking and soaking. To make the tea, use 120 g / 4.23 oz of tea for every 1 L / 1.04 qt of water. The amount of sugar added to the tea will depend on your taste; however, the recommended amount is 100 g / 3.53 oz of sugar to 1 L / 1.04 qt of tea. This presweetened tea will be used to cook and soak the tapioca. When adjusting the consistency of the tapioca, be sure not to add too much liquid so that there is no visible excess liquid.

French Macaron, Cassis Sorbet, and Almond Ice Cream Sandwiches

YIELD 10 PORTIONS

COMPONENTS

150 g / 5.29 oz CASSIS SORBET BASE (page 388), churned into a piping bag and reserved frozen

150 g / 5.29 oz ALMOND ICE CREAM BASE (page 371), churned into a piping bag and reserved frozen

20 FRENCH MACARONS

ASSEMBLY

1. Fit a disposable piping bag with a #4 plain piping tip. Put the piping bag inside a container that will hold it standing up and open up the piping bag.
2. Pipe both frozen items simultaneously into the prepared piping bag so that there will be cassis sorbet on one side of the bag and almond ice cream on the other. Reserve the piping bag in the freezer for at least 45 minutes.
3. Set 10 macarons on a sheet pan, flat side up.
4. Pipe 30 g / 1.06 oz of the sorbet and ice cream on each macaron, and top with another macaron to form a sandwich. Work quickly.
5. Freeze immediately, using a blast freezer, if available; otherwise, place the sheet pan with the macarons directly underneath the freezer's fan.
6. Once the frozen items have firmed up, transfer them to the middle or bottom of the freezer for service. Reserve in an airtight container. Temper the sandwiches for 4 to 5 minutes before serving.

NOTES Wrap these sandwiches in colored confection foil and serve them as petits fours, or serve one large one as a special item.

This dessert is a play on traditional ice cream sandwiches. The possibilities are many (see Citrus Sorbet Sandwiches on page 129).

French Macarons

YIELD ABOUT 44 INDIVIDUAL PIECES (22 FINISHED SANDWICHES)

423 g / 14.92 oz confectioners' sugar

232 g / 8.18 oz almond flour

240 g / 8.46 oz egg whites

105 g / 3.7 oz granulated sugar

Water-based purple food coloring, as needed

1. Blend together the confectioners' sugar and almond flour in a food processor and sift into a large bowl.
2. Make a French meringue with the egg whites and granulated sugar, making sure to add about 10 percent of the sugar at the start of whipping. When making the meringue, gradually add the sugar in several additions, and add the food coloring a little bit at a time as the mixer whips on medium speed. Add enough coloring to obtain a deep color purple. Whip until just under stiff peak.

3. Fold the meringue into the dry ingredients, making sure that the batter has no lumps and is smooth, but not runny. If under-mixed, the surface of the macaron will be lumpy. If overmixed, the macaron batter will run too much after piping and will not hold a round shape.
4. Line 2 very flat sheet pans with silicone paper or a nonstick rubber mat. Using a #5 straight tip, pipe a circle with a diameter of about 5 cm / 2 in. The batter should run slightly, just enough so that the surface is smooth.
5. Let the macarons dry, uncovered, for at least 30 minutes. This is what gives them their characteristic look. While they dry, preheat a deck oven to 225°C / 440°F.
6. Bake the macarons in the back of the deck oven, where it is hottest, for about 6 minutes with the vent open. Pull to the front of the oven for 1 to 2 minutes longer to keep a close eye on the macarons to make sure that the structure of the macarons sets. Make sure that the insides of the macarons are not too wet, otherwise they will fall and lose their volume after being taken out of the oven. They also may be under-baked to the point where they do not lift off of the silicone paper.
7. Let the macarons cool completely on the sheet pan before removing and filling.
8. Reserve in an airtight container or in the freezer for up to 1 month.

NOTE If a smaller or larger macaron is desired, make sure to adjust the baking times accordingly to a shorter or longer period of time.

Almond Milk Granités with Manzanilla Sherry Gelée, Bing Cherry Compote, and Toasted Marcona Almonds

YIELD 10 PORTIONS

COMPONENTS

10 MANZANILLA SHERRY GELÉE RECTANGLES

200 g / 7.05 oz BING CHERRY COMPOTE

400 g / 14.11 oz ALMOND MILK GRANITÉ (page 399)

10 TOASTED MARCONA ALMONDS

ASSEMBLY

1. Place a manzanilla gelée rectangle to one side of the bottom of a serving bowl.
2. Spoon about 20 g / .71 oz of compote on one side of the bowl.
3. Using a spoon, spoon about 40 g / 1.41 oz of almond milk granité on the other side of the bowl. Try to give it some height.
4. Place an almond on top of the cherry compote.
5. Serve immediately.

Manzanilla Sherry Gelée

YIELD 1 KG / 2 LB 3.27 OZ.

25 g / .88 oz gelatin sheets

975 g / 2 lb 2.39 oz Manzanilla sherry

1. Line a half sheet pan with a nonstick rubber mat and a 25 cm / 10 in by 38 cm / 15 in by 2-mm / .08-in Plexiglas or stainless steel frame inside the sheet pan. Pipe melted chocolate (of any kind) around the outside border of the frame and refrigerate. This will keep the gelée from leaking out of the frame.
2. Bloom the gelatin sheets in ice water.
3. Combine 100 g / 3.53 oz of the sherry with the gelatin sheets in a small saucepan. Dissolve the gelatin over low heat.
4. Combine the gelatin mixture with the remaining sherry and pour into the frame. Refrigerate until set (about 30 minutes). Once the gelée has set, remove the frame with a paring knife (be careful not to cut though the nonstick rubber mat).
5. Dip a slicing knife into hot water and dry it with a paper towel. Cut the set gelée into rectangles 1 cm / .5 in by 5 cm / 2 in. Reserve refrigerated. A clean cut (an even cube) makes the difference between a nice-looking dessert and a showstopper. It might take a few tries and patience before a perfect rectangle is achieved.

NOTE Manzanilla sherry is a particularly dry sherry with a woody taste that goes well with the other components of this dessert. Other dry sherries can be substituted.

Bing Cherry Compote

YIELD 1 KG / 2 LB 3.27 OZ

419 g / 15.78 oz Bing cherries, stemmed and pitted

476 g / 16.79 oz sugar

105 g / 3.7 oz water

3 Tahitian vanilla pods, split

1. Bring all of the ingredients to a boil, then reduce the heat and simmer the mixture for 20 minutes. Skim when a thick layer of foam forms on the surface.
2. Cool and reserve in the refrigerator until needed. Use within 3 days.

Toasted Marcona Almonds

YIELD 50 G / 1.76 OZ

50 g / 1.76 oz blanched Marcona almonds

1. Preheat a convection oven to 163°C / 325°F.
2. Line a sheet pan with parchment paper. Spread the almonds evenly onto the pan in a single layer.
3. Bake until light brown and aromatic, about 5 to 10 minutes.
4. Cool to room temperature. Reserve in an airtight container at room temperature. If properly stored, they can keep for up to 5 days.

NOTE The best indication of when a nut is toasted is when you can smell the aroma of the nut. Marcona almonds are Spanish almonds, but any other type of almond may be substituted.

Burnt Milk Gelato with Mexican Hot Chocolate

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz MEXICAN HOT CHOCOLATE

300 g / 10.58 oz BURNT MILK GELATO (page 366)

10 g / .35 oz ground Mexican cinnamon

ASSEMBLY

1. Pour approximately 50 g / 1.76 oz hot chocolate into a 90-ml / 3-oz glass, or until it is two-thirds full.
2. Scoop a medium quenelle (30 g / 1.06 oz) of the gelato on top of the hot chocolate. The quenelle will lose its shape slightly on account of the heat, but its dome shape will remain.
3. Sprinkle a pinch of ground cinnamon on top.
4. Serve immediately.

Mexican Hot Chocolate

YIELD 500 G / 1 LB 1.64 OZ.

219 g / 7.72 oz heavy cream

219 g / 7.72 oz whole milk

62 g / 2.19 oz Mexican chocolate

1. Combine all of the ingredients in a saucepan and bring to a boil while whisking constantly.
2. Serve immediately, or reserve in a thermal container during service. If the latter, shake well before serving. Depending on the quality of the container, it can remain hot from 2 to 8 hours. Make sure to check the internal temperature every hour. If it drops below food-safe holding temperatures, it needs to be re-heated above 62°C / 145°F to prevent bacteria growth. Discard any remaining liquid in the thermal container after each service.

NOTE The hot chocolate will remain hot for a long period of time when it is covered by the ice cream, since the steam has nowhere to go. The ice cream will melt at a slower pace than one would think given that it is in contact with a hot liquid. The layer of gelato that comes into direct contact with the hot chocolate will melt, but it also insulates the remainder of the gelato, keeping it frozen for a substantial amount of time.

Popcorn Sherbet with Caramel Popcorn and Caramel Sauce

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz CARAMEL SAUCE

200 g / 7.05 oz CARAMEL POPCORN

300 g / 10.58 oz POPCORN SHERBET (page 397)

ASSEMBLY

1. Spoon a small amount of caramel sauce (about the size of a dime) on the plate.
2. Anchor 7 or 8 pieces of caramel popcorn to the plate with the caramel. Place 2 or 3 more pieces of caramel popcorn around the plate (a total of approximately 20 g / .71 oz popcorn per plate).
3. Spoon about 10 g / .35 oz of caramel sauce onto the plate, next to the popcorn.
4. Scoop a large quenelle (90 g / 3.17 oz) of the sherbet on top of the anchored caramel popcorn.
5. Serve immediately.

Caramel Sauce

YIELD 500 G / 1 LB 1.64 OZ

270 g / 9.52 oz sugar

140 g / 4.94 oz heavy cream

90 g / 3.17 oz diced salted butter

1. Place the sugar in a medium pot with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated.
2. Bring to a boil over high heat. A good tip to further prevent crystallization is to cover the pot with plastic wrap; the steam that is generated will keep the sides of the pot clean of any sugar crystals.
3. While the sugar cooks, bring the heavy cream to a simmer.
4. Once the sugar reaches a dark amber color (170°C / 338°F), stir in the butter and turn off the heat.
5. Slowly whisk in the hot cream; it is a very violent reaction when the cream hits the sugar, so be careful to add it slowly and use a long whisk.
6. Pour the caramel into an adequately sized container and let the contents cool before serving. Reserve at room temperature during service; caramel has a long shelf life, but it can crystallize over prolonged periods of time. (If refrigerated, it will get too hard to portion.)

Caramel Popcorn

YIELD 600 G / 1 LB 5.15 OZ

400 g / 14.1 oz popping corn

10 g / .35 oz canola oil

600 g / 1 lb 5.16 oz sugar

2 g / .07 oz salt

10 g / .35 oz lemon juice

1. Line a full-size sheet pan with parchment paper. Place a wire cooling rack over the sheet pan and spray it with nonstick oil spray. Place the sheet pan near a marble surface. Have 3 pairs of latex gloves available.
2. Pop the corn in a large pot with the canola oil. Once it is all popped, reserve at room temperature. Continue with the recipe the day it is popped to ensure freshness.
3. In the meantime, place the sugar and the salt in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Add the lemon juice to prevent crystallization. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated.
4. Cook the sugar over high heat until it reaches 170°C / 338°F. Turn the heat off and gently stir in the popped corn. Make sure all of the popcorn is coated with sugar, then pour it over the greased wire rack.
5. Put on the 3 pairs of gloves and spray nonstick cooking spray on them. Working very quickly, separate the popcorn clusters into individual pieces and immediately place them on the marble once they are separated to cool quickly.
6. Once they have cooled, reserve them in an airtight container at room temperature. As long as they are kept in a cool, dry place, they will last for up to 10 days.

NOTE Be careful when making this recipe in hot or humid conditions.

Clotted Cream Ice Cream Sandwiches with Chocolate Shortbread

YIELD 10 PORTIONS

COMPONENTS

400 g / 14.1 oz CLOTTED CREAM ICE CREAM BASE (page 352)

20 CHOCOLATE SHORTBREAD COOKIES

ASSEMBLY

1. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 1.75 cm / .68 in frame inside the sheet pan and place the sheet pan in the freezer.
2. Pacotize 2 beakers of the ice cream. Transfer the ice cream to the prepared frozen frame and spread out evenly using an offset spatula.
3. Harden in a freezer. Depending on the freezer, it can take as little as 30 minutes, but more time should be allowed if the freezer has a weak compressor.
4. Line another half sheet pan with a nonstick rubber mat and freeze.
5. Once the ice cream has hardened, flip the ice cream onto another nonstick rubber mat, place it back on the frozen sheet pan, and peel off the top nonstick rubber mat. Cut the ice cream into circles using a 7.5-cm / 3-in round cutter, dipping the cutter in warm (not hot) water each time to get a clean cut.
6. Once the ice cream is cut, lift each ice cream disk using a small offset spatula and transfer to the second frozen nonstick rubber mat–lined sheet pan. If the uncut ice cream starts getting too soft, return it to the freezer. The ice cream is directly exposed to the freezer ventilation, which might cause excessive hardening and ice crystal formation, so don't let it sit in this condition for too long.
7. Once all the ice cream is cut and hardening in the freezer, place half the cookies on a sheet pan lined with parchment paper, with the rough side (the bottoms of the cookies) facing up. Transfer the ice cream disks to the top of the cookies, then top them with the other half of the cookies, smooth side up.
8. Return to the freezer to harden, then place them in an airtight container rather than on a sheet wrapped in plastic. This method of storage is more efficient for service.
9. Temper the cookies for 4 or 5 minutes before serving so they won't be too hard to eat. Try wrapping the cookies with colored confection foil to make them even more special. If they are wrapped in different colors, it will be visually astounding.

Chocolate Shortbread

YIELD 1 KG / 2 LB 3.27 OZ (ABOUT TWENTY 7.5-CM / 3-IN COOKIES)

361 g / 12.73 oz butter, soft

213 g / 7.5 oz sugar

331 g / 11.69 oz flour

92 g / 3.25 oz cocoa powder

2 g / .07 oz baking powder

1 g / .04 oz salt

1. Cream the butter and sugar in the bowl of an electric mixer using the paddle attachment until light and fluffy, 3 to 4 minutes.
2. Sift the dry ingredients as the butter is being creamed. Add to the creamed butter and mix until just combined (the mixture will form a ball). Shape into a flat, round disk, wrap, and refrigerate for 45 minutes.
3. Preheat a convection oven to 160°C / 325°F.
4. Roll out the dough to a thickness of 6 mm / .23 in. Cut into 7.5-cm / 3-in circles with a round cutter, dock with a fork in 3 separate areas, preferably in a symmetrical pattern, and place the cookies on a sheet pan lined with parchment paper. Freeze for 10 minutes.
5. Bake for 7 to 8 minutes. It is hard to tell when a dark-colored cookie is finished. For this cookie, the best way to tell is if there are no "wet spots" on its surface, meaning it should look completely dry.
6. Carefully transfer the cookies to a cooling rack.
7. Once cooled, reserve in an airtight container at room temperature for up to 2 days. Longer than that, the cookies will soften.

Matcha Sorbet with Toasted Black Sesame Cigars

YIELD 10 PORTIONS

COMPONENTS

10 g / .35 oz toasted black sesame seeds

300 g / 10.58 oz MATCHA SORBET (page 378)

10 TOASTED BLACK SESAME CIGARS

ASSEMBLY

1. Place a small amount of toasted sesame seeds on the desired plate to keep the sorbet anchored.
2. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet directly on top of the sesame seeds.
3. Lean a cigar on the quenelle diagonally.
4. Serve immediately.

NOTE Matcha has a very particular herbal/grassy taste and does not appeal to everyone. It tastes like green tea (which is what it is made from), but much, much stronger.

Toasted Black Sesame Cigars

YIELD 1 KG / 2 LB 3.27 OZ (WITHOUT SESAME SEEDS) (ABOUT 50 CIGARS)

177 g / 6.24 oz butter, soft

354 g / 12.49 oz confectioners' sugar

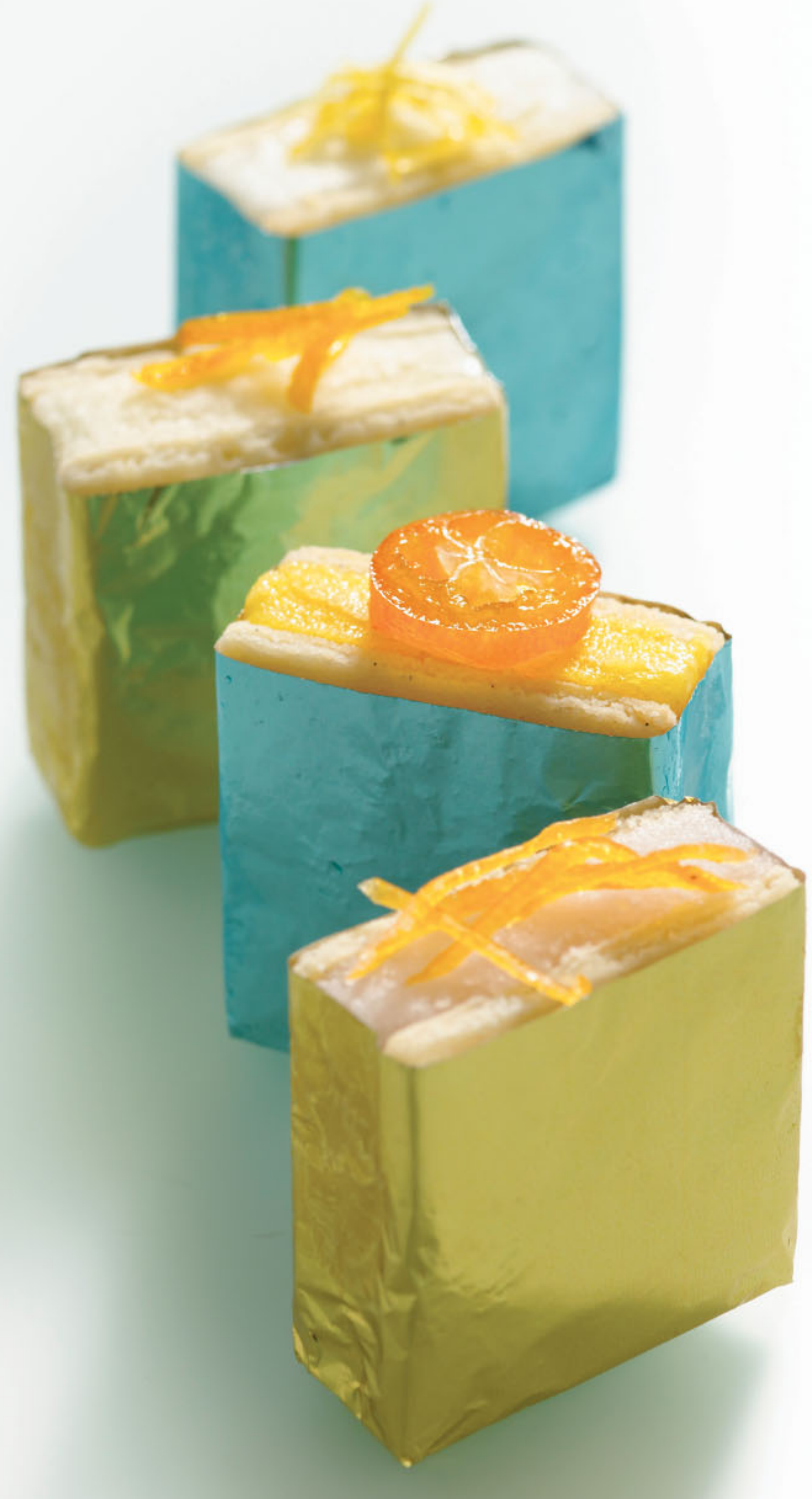
267 g / 9.42 oz egg whites (at room temperature)

202 g / 7.13 oz cake flour

10 g / .35 oz black sesame seeds, or as needed

1. Preheat an oven to 170°C / 338°F.
2. Cream the butter and sugar in a mixer fitted with the paddle attachment until creamed (light and fluffy), about 2 minutes.
3. Add the egg whites slowly and mix until fully incorporated into a homogenous mass.
4. Add the flour on low speed until just incorporated.
5. Spread about 20 g / .71 oz of batter onto a full sheet pan–sized nonstick rubber mat using a 10-cm / 4-in square stencil and small offset spatula. Repeat until the nonstick rubber mat is filled with squares (about 12 squares per mat), leaving 2.5 cm / 1 in between each square. Sprinkle sesame seeds evenly on each square's surface.
6. Bake until golden brown, about 6 minutes. Shape around a tube 2.5 cm / 1 in in diameter while hot. If the tuiles cool off and become too firm to shape around the tube, return the sheet pan with the tuiles to the oven to soften them. Repeat with the remaining batter until the desired number of tuiles is obtained.
7. Reserve in an airtight container for up to 2 days.

NOTE It is crucial that the butter and egg whites be at room temperature so that the ingredients will mix evenly. Otherwise, the mixture will break.



From top to bottom: lemon, grapefruit, kumquat, blood orange

Assorted Citrus Sorbet Sandwiches

YIELD 12 PORTIONS

COMPONENTS

480 g / 1 lb 1.12 oz BLOOD ORANGE SORBET BASE (page 391)

480 g / 1 lb 1.12 oz KUMQUAT SORBET BASE (page 379)

480 g / 1 lb 1.12 oz LEMON SORBET BASE (page 391)

480 g / 1 lb 1.12 oz GRAPEFRUIT SORBET BASE (page 391)

48 VANILLA SHORTBREAD COOKIES

30 g / 1.06 oz CANDIED BLOOD ORANGE ZEST

30 g / 1.06 oz CANDIED KUMQUAT ZEST

30 g / 1.06 oz CANDIED LEMON ZEST

30 g / 1.06 oz CANDIED GRAPEFRUIT ZEST

ASSEMBLY

1. Before churning each sorbet base, line 1 sheet pan with a nonstick rubber mat and a 40 cm / 15.75 in by 60 cm / 23.62 in by 2.5 cm / 1 in stainless steel or Plexiglas frame and line another sheet pan with a nonstick rubber mat. Place both sheet pans in the freezer. Make a total of 4 of these set-ups (1 for each sorbet).
2. Churn each sorbet. The frame will hold a little over 2 L / 2 qt of liquid, but don't forget to take overrun into account. In this case there should be an overrun of 50 percent.
3. Once the sorbets are churned, pour them into the frozen pans. Using an offset spatula, spread the sorbet evenly so that it fits exactly into the frame, and remove any excess. Work quickly to avoid any melting. Place the sorbets back in the freezer.
4. Once the sorbets have hardened, use a 5-cm / 2-in square cutter to cut out sorbet squares. Dip the cutter into room temperature water each time in order to get a clean cut.
5. Place the cut-out squares of sorbet on the other frozen sheet pans. Let them harden again before they are assembled with the shortbread cookies.
6. Place half of the shortbread cookies on a parchment-lined sheet pan.
7. Place a sorbet square on each of the shortbread cookies, making sure it is centered.
8. Place a second shortbread cookie square on top of the sorbet square and push gently so that all three components adhere together.
9. Freeze for 30 minutes, then wrap in colored confection foil, leaving one of the sides exposed. Reserve frozen. Store the ice cream sandwiches in an airtight container rather than on a sheet pan wrapped in plastic. This method of storage is more efficient for service.
10. To serve, place one of each flavor of the sandwiches (4 total per portion) on the desired vessel, with the exposed side facing up. Carefully place a small amount (approximately 2.5 g / .09 oz) of the candied zest on top of each sandwich. Make sure the zest corresponds to the sorbet flavor.
11. These sorbets might be too hard to eat directly from the freezer. Temper them for 4 to 5 minutes before serving.
12. For a dramatic presentation, all of the sandwiches can be placed in a simple silver box with a lid, then set at the center of the table. When the lid is removed, the sandwiches are revealed. Another presentation idea is to use a large silver bowl filled with crushed ice, into which the sandwiches can be randomly placed. The bowl can be set at the middle of the table. This will also work for individual portions, where all 4 sandwiches (or any other amount) can be placed in small bowls filled with crushed ice.

Vanilla Shortbread

YIELD 1 KG / 2 LB 3.27 OZ (ABOUT FIFTY 5 CM / 2 IN SQUARES

148 g / 5.22 oz cake flour

165 g / 5.82 oz confectioners' sugar

295 g / 10.41 oz all-purpose flour

6 g / .21 oz salt

1 vanilla pod, split and scraped

387 g / 13.65 oz butter

1. Sift all of the dry ingredients and place in a 12-qt mixing bowl with the vanilla pod seeds.
2. Place the butter on top of the dry ingredients and insert the paddle attachment.
3. Turn the mixer on to low speed and mix until just combined. It should be a homogenous mass. It is a good idea to scrape the sides of the bowl and mix for a few more seconds to ensure an even mixture of ingredients. Be careful not to overmix the dough.
4. Place the shortbread dough onto a parchment-lined sheet pan and shape into a square with your hands. Cover completely with plastic wrap and refrigerate for at least 2 hours.
5. Preheat a convection oven to 160°C / 325°F.
6. Roll out the dough to 3 mm / .11 in thick. Score the dough with a fork and freeze for 30 minutes.
7. Bake the shortbread as a full sheet until golden brown around the borders, 6 to 8 minutes. Once it is baked, cut the dough into 5-cm / 2-in squares while it is still warm to get the cleanest cut.
8. Once the squares are cut, let the cookies cool. Transfer to an airtight container. Reserve in a cool, dry place for up to 48 hours.

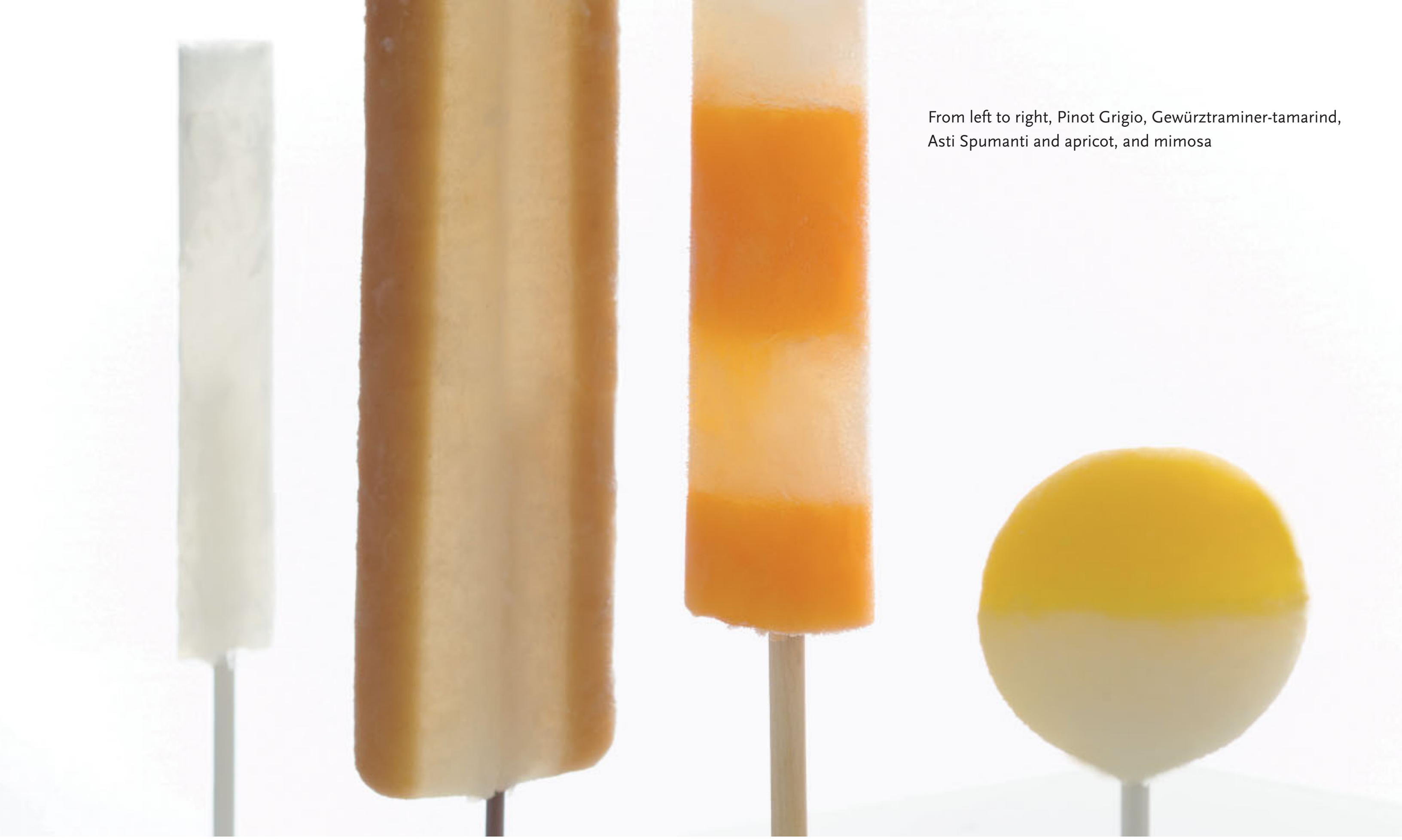
Candied Citrus Zest

YIELD APPROXIMATELY 50 G / 1.76 OZ

33 g / 1.18 oz citrus peel

67 g / 2.35 oz simple syrup (50° Brix)

1. If the pith on the citrus peel is too thick, cut it off and discard. (For kumquats, cut the bottom part that held the stem off, then cut them in quarters and remove the seeds.)
2. Stack 5 pieces of citrus peel with the pith facing up and cut into a fine chiffonade (except kumquats).
3. Blanch the chiffonade (or quartered kumquats) 3 times in water, changing the water each time. This is to eliminate the bitter flavor of the skin. Blanch the grapefruit peel 5 times.
4. Place the blanched zest (or quartered kumquats) in a pot with the simple syrup.
5. Cook over medium-low heat until the zest is translucent.
6. Strain the zest out of the simple syrup and let it cool on a plastic wrap–lined sheet pan, refrigerated. Act quickly and make sure to refrigerate the zest, otherwise the sugar might crystallize.
7. Once cool, reserve in an airtight container in the refrigerator.



From left to right, Pinot Grigio, Gewürztraminer-tamarind, Asti Spumanti and apricot, and mimosa

Mimosa Popsicles, Gewürztraminer-Tamarind, Pinot Grigio, Asti Spumanti, and Apricot Ice Pops

YIELD 10 PORTIONS PER TYPE OF POP

COMPONENTS

10 MIMOSA ICE POPS (page 401)

10 GEWÜRZTRAMINER-TAMARIND ICE POPS (page 402)

10 PINOT GRIGIO ICE POPS (page 402)

10 ASTI SPUMANTI AND APRICOT ICE POPS (page 402)

ASSEMBLY

1. Store the pops in an airtight container rather than on a sheet pan wrapped in plastic. This method of storage is more efficient for service.
2. Temper the pops for 4 to 5 minutes before serving so they won't be too hard to eat. If possible, serve the pops in a standing position. Any vessel with perforations big enough to hold the sticks snugly and securely so they won't tilt or move around but also won't be difficult to pick up out of the vessel will make for a beautiful presentation. Silver, Plexiglas, and even a fine wood surface are good materials to use. The pops can also be wrapped in confection foil of any color, which will enhance the already intriguing dessert. If serving different flavors of popsicles, wrap each flavor in a different color.

Lemon Verbena Sorbet with Peach Jam, Lemon Chips, and Mini Savarins Soaked in Lillet Blanc

YIELD 10 PORTIONS

COMPONENTS

10 MINI SAVARINS SOAKED IN LILLET BLANC

300 g / 10.58 oz LILLET BLANC SOAKING SYRUP

150 g / 5.29 oz PEACH JAM

300 g / 10.58 g LEMON VERBENA SORBET (page 381)

10 LEMON CHIPS

ASSEMBLY

1. Just as service begins, place the container with the soaked savarins close to a heat source, such as an oven or flattop, to keep them warm. Keep a pot with the Lillet Blanc syrup over low heat during service. Keep it covered so that it doesn't evaporate and reduce.
2. Spoon a small amount (approximately 15 g / .53 oz) of peach jam on the desired plate.
3. Re-soak one of the soaked savarins in the hot Lillet syrup for 20 seconds. Let any excess syrup drip off, and place it on the plate.
4. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet on top of the peach jam.
5. Garnish the soaked savarin with a lemon chip. Serve immediately.

Mini Savarins Soaked in Lillet Blanc

YIELD ABOUT 15 SOAKED MINI SAVARINS

LILLET BLANC SOAKING SYRUP

625 g / 1 lb 6.05 oz sugar

375 g / 13.23 oz water

Zest of 1 orange

Zest of 1 lemon

150 g / 5.29 oz Lillet Blanc, or as needed

POACHED BLACK CURRANTS (PART OF THE SAVARIN)

500 g / 1 lb 1.64 oz water

500 g / 1 lb 1.64 oz sugar

Zest of 1 orange

4 cinnamon sticks

3 cloves

200 g / 7.05 oz dried black currants

SAVARINS

75 g / 2.65 oz eggs, at room temperature

221 g / 7.8 oz milk, warmed to 21°C / 70°F

291 g / 10.26 oz bread flour

125 g / 4.41 oz cake flour

6 g / .21 oz instant dry yeast

42 g / 1.48 oz sugar

8 g / .28 oz salt

150 g / 5.29 oz diced butter, soft

83 g / 2.92 oz poached black currants

1. **FOR THE SOAKING SYRUP:** Bring the sugar, water, and orange and lemon zest to a boil to dissolve the sugar. Add Lillet Blanc to taste. Reserve warm if using immediately; otherwise it can be kept at room temperature in an airtight container.
2. **FOR THE POACHED BLACK CURRANTS:** Bring the water, sugar, zest, cinnamon, and cloves to a boil. Reduce the heat and poach the currants to soften them, about 5 minutes. Reserve until needed in the poaching liquid.
3. Spray twenty 60-g/2.11-oz aluminum cups with nonstick cooking spray and place them on a sheet pan.
4. **FOR THE SAVARIN DOUGH:** Mix the dough using the straight dough method: Place the eggs and milk in the bowl of an electric mixer first, then all of the dry ingredients (flours, yeast, sugar, and salt), and then the butter on top; mix on medium speed using a dough hook until it has formed a homogenous mass, about 4 minutes. Drain 83 g / 2.92 oz of the poached currants and add to the dough, mixing them in with the dough hook for five seconds on low speed. The dough will be somewhat loose (almost like a batter); pour it into a piping bag to portion.
5. Portion the dough into 20 g / .71 oz pieces by piping the dough directly into the cups.
6. Let the savarins proof until they have nearly doubled in size; place the sheet pan with the savarins inside a large plastic bag to retain moisture and speed up proofing time. This will take from 30 to 60 minutes at room temperature.
7. Preheat a convection oven to 190°C / 375°F.
8. Heat up the soaking syrup to a light simmer (do not boil).
9. Bake the savarins until golden brown, about 10 minutes. Remove from the molds while they are hot and soak them in the hot soaking syrup until they are soaked through, about 1 minute. Take them out of the syrup; if they soak too long they will turn to mush.
10. Reserve in an airtight container at room temperature. Savarins should be made fresh every day, because they go from being a pleasantly moist sponge to a wet soggy one after 12 hours.

Peach Jam

YIELD 1 KG / 2 LB 3.27 OZ

1.75 kg / 3 lb 13.73 oz peaches

500 g / 1 lb 1.64 oz sugar

2.5 g / .09 oz pectin

10 g / .35 oz lemon juice

1. In a large pot, combine the peaches with 475 g / 16.76 oz of sugar. Combine the remaining sugar with the pectin and set aside.
2. Cook the peaches over medium-high heat until the flesh is tender and the pits and skin come off easily, about 45 minutes. Pour in the sugar-pectin mix while stirring constantly, then stir in the lemon juice and cook for 5 more minutes, or until the jam has visibly thickened.
3. Let the jam cool, then pass it through a drum sieve. Reserve refrigerated for up to 1 month.

NOTE Spices can be added to the peach jam while it is cooking, such as split and scraped vanilla pods and cinnamon.

Lemon Chips

YIELD 500 G / 1 LB 1.64 OZ

500 g / 1 lb 1.64 oz lemons

1 kg / 2 lb 3.27 oz simple syrup (50° Brix)

1. Freeze the lemons until hardened.
2. Fill a saucepan two-thirds full with water and bring to a simmer.
3. Bring the simple syrup to a gentle simmer.
4. Slice the lemons very thinly with an electric slicer. Blanch in the hot water until translucent, about 10 minutes. Remove from the pot with a spider and blanch once more in fresh water for ten minutes.
5. Place the slices in a single layer in a hotel pan. Pour the simple syrup over the lemon slices so that they are generously coated. Let them sit in the syrup for at least 1 hour and up to 1 week.
6. Remove each slice from the syrup, letting any excess drip off of it, and then place them all in a dehydrator at 57°C / 135°F until dry and crisp. They can also be dried in a convection oven on a nonstick rubber mat at the same temperature with the vent open.
7. Carefully lift the slices from the nonstick rubber mat with a rubber spatula and let them cool and harden.
8. Store at room temperature in an airtight container. Use silica gel packs to absorb any moisture from their environment in order to prevent them from softening. In dry conditions, they can last up to 1 month.

NOTE Some lemon slices will not be whole or will have some damage. Discard them and use only the whole ones for plating.

Mascarpone Ice Cream with Passion Fruit Curd

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz MASCARPONE ICE CREAM BASE (page 353)

10 PASSION FRUIT CURD STRIPS (each portion is 50 g / 1.76 oz)

SEEDS OF 5 PASSION FRUITS (about 50 g / 1.76 oz)

ASSEMBLY

1. Place a sheet of fleximold demi-spheres 3.5 cm / 1.38 in in diameter on a sheet pan in the freezer.
2. Pacotize or churn the ice cream, transfer to a piping bag, and pipe into the demi-sphere molds. Place in the freezer to harden.
3. Once hardened, put on gloves and fuse 2 demi-spheres to form a sphere, gently rubbing the seam with your fingers until the halves have fused. Cover and reserve frozen. Do not use after 24 hours.
4. Take a passion fruit curd strip out of the freezer and let it warm up slightly at room temperature (enough to twist it without cracking it), then twist it so it forms a loop. Place on the desired plate.
5. Place a spoonful of the passion fruit seeds on the plate in a straight line about 10 cm / 4 in long across the front of the curd loop.
6. Place a sphere of ice cream on the plate next to the curd loop. Use a small piece of the gelled curd to anchor down the sphere. Let it temper for 3 to 4 minutes, and serve.

NOTE If desired, garnish the top of the mascarpone ice cream with 2 strands of mint or basil chiffonade.

Passion Fruit Curd

YIELD 1 KG / 2 LB 3.27 OZ

149 g / 5.26 oz passion fruit purée

15 g / .53 oz lemon juice

198 g / 6.98 oz eggs

188 g / 6.63 oz sugar

450 g / 15.87 oz diced butter

20 g / .71 oz gelatin sheets, bloomed in ice cold water

1. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 6-mm / .25-in frame inside the sheet pan. The frame should be big enough to fit just inside the sheet pan.
2. Bring the passion fruit purée and lemon juice to a boil. Whisk together the eggs and sugar. Pour the purée and juice over the eggs and sugar while whisking constantly.

3. Cook the mixture over a hot water bath until thickened, stirring with a whisk occasionally. Add the diced butter and stir until combined. Pass through a fine-mesh strainer and add the bloomed gelatin sheets, stirring until completely dissolved. Pour into the prepared frame, evening out the surface with an offset spatula so that the curd is at the same level as the top of the frame. Place an acetate sheet on top of the curd and freeze.
4. Once frozen, remove the acetate sheet and cut into rectangles 1.75 cm / .68 in by 12.5 cm / 5 in using a thin slicing knife. Reserve frozen.

NOTE If the passion fruit purée is concentrated, use 1 part orange juice to 1 part passion fruit concentrate for the total amount of required purée.

Passion Fruit Seeds

YIELD 50 G / 1.76 OZ

5 passion fruits

1. Cut each passion fruit in half and pour the fruit's contents into a strainer.
2. Reserve the seeds in the refrigerator for up to 3 days.
3. Reserve the juice in the refrigerator for making sorbet.

NOTE Passion fruit has reached its peak ripeness when the skin is wrinkled.

Pomegranate Sorbet

YIELD 10 PORTIONS

COMPONENTS

600 g / 1 lb 5.16 oz POMEGRANATE SORBET (page 393)

200 g / 7.05 oz pomegranate seeds

ASSEMBLY

1. Place two 30-g/1.06-oz scoops of pomegranate sorbet into the desired glass.
2. Sprinkle 20 g / .71 oz pomegranate seeds on top of the sorbet and serve immediately.

Cava Sorbet with Poached Apricots

YIELD 10 PORTIONS

COMPONENTS

25 POACHED APRICOT HALVES

600 g / 1 lb 5.15 oz CAVA SORBET (page 380)

1 sheet gold leaf

ASSEMBLY

1. Cut the apricot halves in half to obtain quarters.
2. Scoop 60 g / 2.11 oz of cava sorbet into the desired glass vessel.
3. Arrange 5 apricot quarters on top of the cava sorbet.
4. Garnish with small pieces of gold leaf.

Poached Apricots

YIELD 100 G / 3.53 OZ

120 g / 4.23 oz Sauternes (or cava; if using cava, add 120 g / 4.23 oz sugar)

4 g / .14 oz orange zest

⅓ cinnamon stick

100 g / 3.53 oz dried apricot halves

1. Bring the Sauternes, orange zest, and cinnamon to a simmer. Add the apricots and slowly poach until they are tender, but not falling apart, about 20 minutes.
2. Leave the apricots in the poaching liquid and reserve them at room temperature for up to 3 days. If refrigerated, they will keep for 5 days.

Lime Granité with Mint Gelée

YIELD 10 PORTIONS

COMPONENTS

10 MINT GELÉE RECTANGLES (each portion is 7 g / .24 oz)

10 g / .35 oz LIME ZEST POWDER

500 g / 1 lb 1.64 oz LIME GRANITÉ (page 399)

10 mint leaves, cut into fine chiffonade

ASSEMBLY

1. Place a mint gelée rectangle on the desired plate, using a small offset spatula to move it from the sheet pan to the plate.
2. Sprinkle 1 g / .04 oz of the lime zest powder in a line on top of the mint jelly and slightly onto the plate.
3. Spoon 50 g / 1.76 oz of the granité carefully behind the jelly.
4. Place 5 to 7 very fine strands of mint chiffonade on top of the lime granité and serve immediately.

Mint Gelée

YIELD 125 G / 4.41 OZ (ABOUT 17 RECTANGLES)

BLANCHED MINT

500 g / 1 lb 1.64 oz water

1 g / .04 oz ascorbic acid

50 g / 1.76 oz mint leaves

MINT JELLY

24 g / .85 oz blanched mint

98 g / 3.46 oz water

1 g / .04 oz ascorbic acid

Pinch salt

1.5 g / .05 oz sugar, as needed

4 g / .14 oz agar-agar

1. FOR THE BLANCHED MINT: Bring the water and ascorbic acid to a boil. Blanch the mint for 5 to 8 seconds, until wilted. Make sure that the mint does not lose its color. Shock the mint in ice water and drain.
2. FOR THE MINT JELLY: Purée the blanched mint, water, ascorbic acid, and salt until smooth, and strain. Add sugar to taste (it should be very mildly sweet) and stir until the sugar is dissolved.
3. Line a half sheet pan with a non-stick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 1 cm / .39 in Plexiglas or stainless steel plaque inside the sheet pan.
4. Boil 250 g / 8.82 oz of the mint mixture with the agar-agar over medium heat for 10 seconds. Combine the rest of the mint mixture off the heat and pour the liquid into the frame immediately. If the mint mixture sits in the hot pot for too long, it will turn brown. Refrigerate until set, about 20 minutes.

5. Cut into rectangles .75 cm / .29 in by 2.5 cm / 1 in using a metallic cutter or knife. Each rectangle will weigh about 7 g / .25 oz. Slightly separate the jelly rectangles from one another and reserve on the nonstick rubber mat in the refrigerator, covered with plastic wrap.

Lime Zest Powder

YIELD 100 G / 3.53 OZ

200 g / 7.05 oz lime zest

1. Microwave the zest in a microwave-safe container (preferably flat so that the moisture can evaporate quickly) at 10-second intervals until dry. Be sure to periodically stir the zest so that it dries evenly. When dry, let cool to room temperature.
2. Grind in a spice grinder.
3. Store at room temperature in an airtight container. If it is completely dry and well covered, it can last up to 1 month.

NOTE Zest the limes using a rasp. If possible, use a porcelain plate for microwaving.

Cabrales Cheese Ice Cream with Sticky Date Pudding

YIELD 10 PORTIONS

COMPONENTS

10 STICKY DATE PUDDING RECTANGLES (each portion is 50 g / 1.76 oz)

300 g /10.58 oz CABRALES CHEESE ICE CREAM (page 353)

ASSEMBLY

1. Place 50 g / 1.76 oz of the sticky date pudding at the center of the desired plate.
2. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream directly on top of the pudding and serve immediately. These flavors are so clear and unique that they should be left on their own to be fully appreciated.

Sticky Date Pudding

YIELD 2 KG / 4 LB 6.54 OZ

633 g / 1 lb 6.33 oz water

348 g / 12.27 oz pitted dates

11 g / .39 oz baking soda

363 g / 12.8 oz all-purpose flour

3 g / .11 oz baking powder

2 g / .07 oz ground ginger

4 g / .14 oz salt

119 g / 4.2 oz butter

280 g / 9.88 oz sugar

237 g / 8.36 oz eggs, at room temperature

1. Preheat a convection oven to 160°C / 325°F. Line a half sheet pan with a nonstick rubber mat and spray the borders with nonstick cooking spray.
2. Bring the water and dates to a boil. Reduce the heat to a simmer and cook for 5 minutes. Remove from the heat and whisk in the baking soda (the mixture will foam). Let steep for at least 20 minutes, then purée with a beurre mixer.
3. Sift together the flour, baking powder, ginger, and salt.
4. Cream the butter and sugar in a mixer using a paddle attachment until the butter is creamed (light and fluffy), about 4 minutes. While the machine is running on low speed, gradually add the eggs, one at a time. Scrape the sides of the bowl after each addition.
5. While the machine is still on, add the dry ingredients in several additions and then the dates. Make sure to occasionally scrape down the sides of the bowl.
6. Spread evenly onto the prepared sheet pan.
7. Bake until the cake springs back to the touch at the center of the pan, about 7 minutes.
8. Let cool to room temperature.
9. Once the cake has cooled, freeze it for 2 hours before cutting it. It cuts very cleanly when it is partially frozen.
10. Cut into rectangles 2.5cm / 1 in by 12.5 cm / 5 in by 2.5 cm / 1 in.
11. Reserve in an airtight container at room temperature. Discard after service.

Balsamic Vinegar Ice Cream with Goat Cheese Bavarian, Balsamic Croquant, Walnut Cake, and Candied Walnuts

YIELD 10 PORTIONS

COMPONENTS

10 WALNUT CAKE RECTANGLES

10 CANDIED WALNUTS

10 GOAT CHEESE BAVARIANS

50 g / 1.76 oz BALSAMIC GLAZE

10 pieces BALSAMIC CROQUANT

300 g / 10.58 oz BALSAMIC VINEGAR ICE CREAM (page 354)

ASSEMBLY

1. Stand the walnut cake up on the desired plate.
2. Place a candied walnut on top of the cake.
3. Place 1 piece of the Bavarian diagonally in front of the cake.
4. Drizzle 5 g / .18 oz of the balsamic glaze in a thin straight line across the top of the Bavarian.
5. Place a balsamic croquant piece behind the Bavarian, next to the walnut cake.
6. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the croquant and serve immediately.

Walnut Cake

YIELD 2.5 KG / 5 LB 8.18 OZ (ABOUT 40 PORTIONS PER HALF SHEET PAN)

495 g / 1 lb 1.46 oz cake flour

15 g / .53 oz baking powder

10 g / .35 oz salt

495 g / 1 lb 1.46 oz eggs

495 g / 1 lb 1.46 oz walnut paste (85% walnuts)

495 g / 1 lb 1.46 oz butter, soft

495 g / 1 lb 1.46 oz sugar

1. Preheat a convection oven to 160°C / 325°F.
2. Grease a half sheet pan and line with parchment paper or a nonstick rubber mat (if using a nonstick rubber mat, grease only the frame of the sheet pan).
3. Sift the flour, baking powder, and salt together twice.
4. Warm the eggs to 27°C / 80°F over a hot water bath, whisking constantly. Reserve warm.
5. Combine the walnut paste, butter, and sugar in a 12-qt mixer bowl fitted with the paddle attachment and mix on medium speed until creamed, about 7 minutes. Scrape down the sides of the bowl often.
6. Slowly pour in the warm eggs in 4 additions to ensure a proper emulsion. Scrape down the sides of the bowl after each addition of eggs.
7. Turn the mixer off. Add the dry ingredients all at once and mix on low speed until just combined. Scrape the sides of the bowl as well the bottom and mix on low speed for a few more seconds.
8. Spread the batter evenly in the prepared sheet pan.
9. Bake until the batter is cooked through, golden brown, and springs back when pressure is applied, about 15 minutes. Always test the center of the pan, where it will take the longest to bake. Let cool to room temperature.
10. Before cutting the cake, freeze it for 45 minutes to 1 hour. It cuts very cleanly when it is partially frozen.
11. Cut the cake into rectangles 2.5 cm / 1 in by 5 cm / 2 in by 2.5 cm / 1 in.
12. Reserve in an airtight container at room temperature. Discard after service.

Goat Cheese Bavarians

YIELD 500 G / 1 LB 1.64 OZ (ABOUT 20 PORTIONS)

GOAT CHEESE ANGLAISE

171 g / 6.03 oz milk

171 g / 6.03 oz soft goat's milk cheese

86 g / 3.03 oz sugar

72 g / 2.54 oz egg yolks

BAVARIAN

247 g / 8.71 oz heavy cream

247 g / 8.71 oz goat cheese anglaise

6 g / .21 oz gelatin sheets, bloomed

1. **FOR THE ANGLAISE:** Combine all of the ingredients in a saucepan. Over medium heat, bring the mixture up to 80°C / 175°F while whisking constantly. Strain through a fine-mesh strainer and cool over an ice bath.
2. **FOR THE BAVARIAN:** Whip the heavy cream to medium-stiff peaks and reserve refrigerated.
3. Combine 250 g / 8.82 oz of the anglaise with the bloomed gelatin in a small saucepan and melt over medium-low heat. Combine with the remaining anglaise.
4. Quickly fold the heavy cream into the base in 2 additions. If this is not done quickly, the gelatin will set and there will be chunks in the product.
5. Portion into a rectangular fleximold with 12 rectangles, each measuring 3 cm / 1.25 in by 8 cm / 3.25 in by 3 cm / 1.25 in. Place in the freezer to harden.
6. Once hardened, take the Bavarians out of the mold, cut each piece in half, and refrigerate.

Candied Walnuts

YIELD 600 G / 1 LB 5.15 OZ

1 kg / 2 lb 3.27 oz sugar

10 g / .35 oz lemon juice

500 g / 1 lb 1.64 oz walnuts

1. Line a full-size sheet pan with parchment paper. Place a wire cooling rack over the sheet pan and spray it with nonstick cooking spray. Place the sheet pan next to a marble surface. Have 3 pairs of latex gloves available.
2. Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Add the lemon juice to prevent crystallization. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated. Begin cooking the sugar over high heat.
3. Meanwhile, toast the nuts until they have a toasted aroma and a light brown color. If the sugar has not caramelized by this point, keep the nuts hot until it does. If desired, keep them in the oven, but turn it off and open the oven door slightly. If cold nuts are added to the sugar, it will crystallize.
4. Continue to cook the sugar until it reaches 170°C / 338°F. Turn the heat down to low and stir in the toasted nuts. Make sure all the nuts are coated in sugar, and continue to stir until you start hearing a popping sound, after about 2 minutes, then pour the contents of the pot over the greased wire rack.
5. Put on the 3 pairs of gloves and spray nonstick cooking spray on them. Working very quickly, separate the nuts from each other and immediately place them on the marble to cool quickly.
6. Once they have cooled, reserve them in an airtight container at room temperature. Use silica gel packs to absorb any moisture in the container. If properly stored, they can keep for up to 1 week.

NOTE Be careful when making this recipe in humid conditions. The sugar-coated walnuts can get tacky.

Balsamic Glaze

YIELD 250 G / 8.82 OZ

1 kg / 2 lb 3.27 oz balsamic vinegar

375 g / 13.22 oz sugar

1. Combine both ingredients in a saucepan.
2. Cook over medium-high heat until the liquid thickens to a glaze consistency, skimming the liquid as it cooks. The best way to check for doneness is to spoon a small amount onto a plate and let it cool off. Pass your finger through it; if it holds the trace of your finger, it is ready to come off the heat.
3. Reserve, covered, at room temperature.

Balsamic Croquant

YIELD 550 G / 1 LB 3.4 OZ (ABOUT 50 PIECES)

500 g / 1 lb 1.64 oz isomalt

10 g / .35 oz water

50 g / 1.76 oz balsamic vinegar

1. Cook the isomalt and the water in a small saucepan to 145°C / 293°F. Stir in the balsamic vinegar carefully to avoid splattering.
2. Pour onto a nonstick rubber mat and place another nonstick rubber mat on top. Roll out as thinly as possible with a rolling pin. Let the isomalt cool on the nonstick rubber mat, then place it in a warm oven to make it pliable again. This step will create hundreds of small bubbles in the croquant, which will make it very visually appealing.
3. Once the sugar is pliable again, start pulling it as thin as you can with your fingers. If there are thick pieces, they will be impossible to eat; they should be as thin as a sheet of paper (or thinner if possible).
4. Place each pulled piece on top of a curved surface, such as a rolling pin or wooden dowel, while it is still warm and pliable, to give it a curved shape. The croquant will cradle the ice cream. Try to obtain similar-looking pieces (it will be impossible to make them identical). If it hardens too much, they can be softened in the oven again for a few seconds.
5. These pieces are very fragile. Reserve in a sturdy airtight container and handle very carefully. Use silica gel packs to absorb any moisture in the container. If properly stored, they can last indefinitely.

NOTES Use 2 or 3 pairs of vinyl or latex gloves when you are handling the hot sugar.

If desired, add a solid garnish (such as candied citrus zest, poppy seeds, herbs, or even pieces of the candied walnuts) once the sugar has been spread and rolled out thinly on the nonstick rubber mat. Sprinkle the garnish over the sugar and then place in an oven for 30 seconds so that they bind to each other.

This caramel will not crystallize due to the nature of the sugar used. It is also highly resistant to humidity.

Guava Sorbet in Chilled Hibiscus Soup with Crisp Meringue Sticks

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz GUAVA SORBET BASE (page 388)

600 g / 1 lb 5.16 oz CHILLED HIBISCUS SOUP

20 g / .71 oz corn syrup

60 CRISP MERINGUE STICKS

10 CRYSTALLIZED SUGAR HIBISCUS FLOWERS

ASSEMBLY

1. Line 10 PVC tubes 2.5 cm / 1 in diameter by 7.5 cm / 3 in long with acetate. Place on a sheet pan in a standing position and place them in the freezer.
2. Churn or pacotize the sorbet, pour it into a piping bag, and pipe it into the prepared PVC tubes. When piping, make sure the tip stays submerged in the sorbet to prevent air pockets inside the tube. Pipe all the way to the top, and even out the surface with an offset spatula.
3. Place in the freezer to harden.
4. Pour 60 g / 2.12 oz of hibiscus soup into a small carafe.
5. Place a small amount of corn syrup in the desired serving bowl to stabilize the meringue sticks. Line up 3 meringue sticks on top of the corn syrup.
6. Unmold the guava sorbet from the PVC tube and take the acetate off. Place the sorbet directly on top of the meringue sticks.
7. Place 1 crystallized sugar hibiscus flower on top of the sorbet.
8. Place 3 meringue sticks in a random but balanced pattern inside the bowl next to the sorbet.
9. Let the sorbet temper for 2 more minutes and serve immediately.
10. Once the bowl is placed in front of the customer, pour the soup into the bowl, making sure to pour down the side and close to the base of the bowl so as not to splatter.

Crisp Meringue Sticks

YIELD 501 G / 1 LB 1.67 OZ (ABOUT 50 PORTIONS)

167 g / 5.89 oz egg whites

167 g / 5.89 oz granulated sugar

167 g / 5.89 oz confectioners' sugar, sifted

1. Preheat a convection oven to 100°C / 212°F.
2. Whip the egg whites to medium peak. Pour in the granulated sugar as the mixer whips and continue whipping until the meringue has reached a stiff peak.

3. Remove the bowl from the mixer and fold in the sifted confectioners' sugar.
4. Pipe bâtons onto a sheet tray, the length of the tray, using a #2 straight tip.
5. Bake with the vent open for 1 hour, or until the meringue is crisp.
6. Break into 5-cm / 2-in sticks. Reserve in an airtight container at room temperature. Use silica gel packs to absorb any moisture in the container. If properly kept, they can last for up to 1 week.

Chilled Hibiscus Soup

YIELD 750 G / 1 LB 10.44 OZ

250 g / 8.82 oz hibiscus flowers (dried)

1.25 kg / 2 lb 12.09 oz water

About 750 g / 1 lb 10.45 oz sugar, as needed

1. Combine the hibiscus with the water in a saucepan.
2. Bring to a boil and let the hibiscus steep for 5 minutes.
3. Add sugar to taste, whisking until the sugar has dissolved. Let the liquid cool.
4. Strain through a fine-mesh strainer to remove the flowers. Reserve 20 of the flowers for crystallizing.

NOTES Hibiscus has a very tart taste, so add sugar accordingly.

Crystallized Sugar Hibiscus Flowers

YIELD 20 CRYSTALLIZED FLOWERS

20 poached hibiscus flowers (from above)

100 g / 3.53 oz pasteurized egg whites

1 kg / 2 lb 3.27 oz sugar

1. Squeeze the excess water from the flowers using a cloth towel.
2. Brush the flowers with the egg whites.
3. Toss the flowers in sugar. Let them sit in the sugar for 48 hours. Make sure they are completely covered by it.
4. Remove the sugared flowers from the sugar. Reserve in an airtight container at room temperature. Use silica gel packs to absorb any moisture in the container. If properly stored, they can last for up to 1 month.

Peppermint Sorbet Cubes with Whipped Crème Chantilly, Devil's Food Cake, and Candy Cane Dust

YIELD 10 PORTIONS

COMPONENTS

1 kg /2 lb 3.27 oz PEPPERMINT SORBET BASE (page 395)

200 g / 7.05 oz DARK CHOCOLATE SPRAY

10 DEVIL'S FOOD CAKE RECTANGLES

300 g / 10.58 oz WHIPPED CRÈME CHANTILLY

30 g / 1.06 oz crushed candy canes

50 g / 1.76 oz cocoa nibs

ASSEMBLY

1. Place 10 stainless steel rectangular molds 3.75 cm / 1.5 in by 5 cm / 2 in standing up on a half sheet pan in the freezer.
2. Churn or pacotize the sorbet, pour into a piping bag, and pipe into the frozen molds. Smooth the sorbet even with the tops of the molds using an offset spatula.
3. Place in the freezer to harden.
4. Torch the molds with the flame for a few seconds until they release. Unmold the rectangles and return to the freezer.
5. Set up an area to spray the chocolate.
6. Load the chocolate spray into the spray gun. Make sure the chocolate is between 32°C / 90°F and 38°C / 100°F.
7. Spray the sorbet with the chocolate on one side only. Return the sorbet to the freezer.
8. Place a cake rectangle on the desired plate.
9. Scoop a medium quenelle (30 g / 1.06 oz) of crème chantilly onto the right side of the cake.
10. Sprinkle 3 g / .11 oz crushed candy cane on top of the quenelle.
11. Place a small mound (about 5 g / .18 oz) of cocoa nibs behind the quenelle and the cake.
12. Place the sorbet cube on top of the cocoa nibs. Let it temper for 2 to 3 minutes and serve immediately.

Dark Chocolate Spray

YIELD 200 G / 7.05 OZ

100 g / 3.53 oz dark chocolate (64%), finely chopped

100 g / 3.53 oz cocoa butter, finely chopped

Bring the chocolate and cocoa butter to 38°C / 100°F over medium heat. Reserve warm.

Devil's Food Cake

YIELD 2 KG / 2 LB 3.27 OZ (1 HALF SHEET PAN/40 PORTIONS)

539 g / 1 lb 3.01 oz sugar
157 g / 5.54 oz pastry flour
157 g / 5.54 oz bread flour
147 g / 5.19 oz cocoa powder
49 g / 1.73 oz baking soda
24 g / .85 oz baking powder
15 g / .53 oz salt
173 g / 6.1 oz eggs
52 g / 1.83 oz egg yolks
317 g / 11.18 oz buttermilk
73 g /2.57 oz coffee
298 g / 10.51 oz butter, melted but cool

1. Preheat a convection oven to 160°C / 325°F.
2. Line a half sheet pan with a nonstick rubber mat. Spray the inside of the sheet pan's frame with nonstick cooking spray.
3. Sift all the dry ingredients into a medium bowl.
4. In another medium bowl, combine the eggs, egg yolks, buttermilk, and coffee, then mix in the butter.
5. Combine the wet ingredients with the dry ingredients using a whisk.
6. Pour into the prepared pan and spread out evenly using an offset spatula.
7. Bake until the cake springs back at the center of the sheet pan when gentle pressure is applied, about 15 minutes.
8. Cool at room temperature. Once cool, freeze for 1 hour, then cut. It cuts very cleanly when it is partially frozen.
9. Cut into rectangles 2.5 cm / 1 in by 7.5 cm / 3 in by 2.5 cm / 1 in.
10. Reserve in an airtight container at room temperature. Discard any leftover pieces after service.

Whipped Crème Chantilly

YIELD 250 G / 8.82 OZ

230 g / 8.11 oz heavy cream
20 g / .71 oz confectioners' sugar

1. Whip the cream and sugar on high speed to a stiff peak.
2. Reserve refrigerated. Keep it in the bowl it was whipped in, because it might be necessary to re-whip it several times during service.

Spiced Dolcetto Sorbet with Candied Bosc Pears and Phyllo Crisps

YIELD 10 PORTIONS

COMPONENTS

40 to 50 g / 1.41 to 1.76 oz SPICED MERLOT REDUCTION

10 slices CANDIED BOSC PEARS

300 g / 10.58 oz SPICED DOLCETTO SORBET (page 392)

10 PHYLLO CRISPS

5 g / .18 oz ground cinnamon

ASSEMBLY

1. Spoon 4 to 5 g / .14 to .18 oz of the merlot reduction on the desired plate. If desired, spoon smaller dots of sauce over the plate.
2. Place a candied pear slice on top of the sauce.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet on top of the pear slice.
4. Lean a phyllo crisp on the quenelle.
5. Sprinkle cinnamon across the finished plate.
6. Serve immediately.

Spiced Merlot Reduction

YIELD 250 G / 8.81 OZ

5 cinnamon sticks

5 cloves

1 nutmeg

1 kg / 2 lb 3.27 oz Merlot

500 g / 1 lb 1.64 oz sugar

1. Toast the spices on a sheet pan in a hot oven or in a sauté pan over medium heat, then crush them. Place the spices and the wine in a saucepan and stir in the sugar.
2. Cook over medium-low heat until the liquid has reduced to a syrup consistency, about 45 minutes. Skim the liquid throughout the cooking process.
3. Strain through a fine-mesh strainer.
4. Cool over an ice bath. Reserve refrigerated. This will last for up to 1 month since it is a sugar-based syrup.

Candied Bosc Pears

YIELD 575 G / 1 LB 4.28 OZ

1.135 kg / 2 lb 8.02 oz sugar

340 g / 11.99 oz water

26 g / .9 oz lemon juice

500 g / 1 lb 1.64 oz Bosc pears, peeled, cored, and cut into eighths

1. Bring the sugar, water, and lemon juice to a boil. Cook over very high heat until the syrup reaches a temperature of 160°C / 320°F.
2. Add the pears.
3. Reduce the heat to low. Cook very slowly until the pectin in the fruit has been activated and the fruit is translucent, about 20 minutes.
4. Remove the pears from the liquid using a slotted spoon and place on silicon paper, a nonstick rubber mat, or a sheet pan lined with plastic wrap.
5. Cool to room temperature. Reserve covered with plastic wrap at room temperature. Discard after 10 days.

NOTE Use very firm, underripe pears. Ripe pears will turn to mush when cooking in the hot sugar.

Phyllo Crisps

YIELD 10 CRISPS

200 g / 7.05 oz sugar

15 g / .53 oz ground cinnamon

3 g / .11 oz ground cloves

3 g / .11 oz ground nutmeg

3 sheets phyllo dough (25 cm / 10 in by 38 cm / 15 in)

200 g / 7.05 oz clarified butter, melted but cool

1. Preheat a convection oven to 160°C / 325°F.
2. Grind the sugar, cinnamon, cloves, and nutmeg to a powder in a spice grinder or coffee grinder.
3. Place 1 sheet of phyllo dough on a cutting board. Brush with clarified butter. Sprinkle with one third of the sugar mixture. Cover with another layer of phyllo dough and repeat the procedure with the remaining phyllo dough. Cut into strips that are 3.75 cm / 1.5 in by 12.5 cm / 5 in long. Wrap each strip around a ring that is 7.5 cm / 3 in in diameter. The phyllo should wrap halfway around the ring. Wrap each ring with a strip of parchment paper and attach both ends with a clip to secure it.
4. Bake until golden brown, about 7 minutes. Allow to cool to room temperature. Once cooled, remove the baked phyllo from the rings. Reserve in an airtight container at room temperature. Discard after 2 days.

Noilly Prat Granité with Crystallized Orange Blossom Petals

YIELD 10 PORTIONS

COMPONENTS

750 g / 1 lb 10.46 oz NOILLY PRAT GRANITÉ (page 400)

10 CRYSTALLIZED ORANGE BLOSSOM PETALS

ASSEMBLY

1. Spoon 75 g / 2.65 oz of the granité into the desired vessel, preferably a bowl or a glass, not a flat surface.
2. Top with 5 orange blossom petals.
3. Serve immediately.

NOTE The flavor of this granité is very intense, and the crystallized orange blossoms balance out its flavor and add another texture.

Crystallized Orange Blossom Petals

YIELD 50 G / 1.76OZ

25 g / .88 oz orange blossom petals

50 g / 1.76 oz pasteurized egg whites

100 g / 3.53 oz bakers' sugar

1. Using a smooth artist's brush, brush the petals with a thin layer of egg whites on both sides, then gently toss in the sugar. Pick each petal up by the stem end and let it dry at on a sheet pan lined with parchment paper at room temperature for at least 4 hours before using.
2. Reserve in an airtight container at room temperature. Discard after 4 days.

Turrón Gelato Cones

YIELD 10 PORTIONS

COMPONENTS

200 g / 7.05 oz TURRÓN GELATO BASE (page 366)

10 PLAIN CONES

5 g / .18 oz coarsely chopped toasted pistachios

ASSEMBLY

1. Churn or pacotize the gelato and harden slightly in the freezer.
2. Place 3 cm / 1.25 in demi-sphere fleximolds in the freezer. The mold will need at least 20 demi-spheres (a full-size fleximold sheet of this size of demi-sphere will have between 64 and 72 in most cases).
3. Once slightly hardened, transfer the gelato to a piping bag. Pipe into the demi-sphere molds. Even out the surface with an offset spatula. Return to the freezer to harden completely.
4. Once hardened, assemble the demi-spheres into spheres by fusing both spheres. Use your gloved hands to gently rub the demi-spheres where they touch. Place them back on the fleximold; the mold holds the spheres in place. Place the molds in the freezer to harden, then cover with plastic wrap.
5. Place the cones on a perforated stand. Stainless steel, Plexiglas, Lucite, or silver are very good materials to use.
6. Place 1 sphere of the gelato onto each cone. Garnish with the pistachios.
7. Since the spheres have hardened in the freezer, it is a good idea to let them temper for 3 to 5 minutes to soften before serving.

NOTE For Oatmeal Ice Cream Cones, substitute Oatmeal Ice Cream base (page 354) for the Turrón Gelato base. Use Oatmeal Cones (page 158) instead of Plain Cones and substitute piloncillo sugar for the pistachios.

For Praline Ice Cream Cones, substitute Praline Ice Cream base (page 356) for the Turrón Gelato base. Use Almond Cones (page 158) instead of Plain Cones and substitute 10 g / .35 oz Candied Grapefruit Zest (page 130) for the pistachios.

Plain Cones

YIELD 1 KG / 2 LB 3.27 OZ (ABOUT 50 CONES)

177 g / 6.24 oz butter

354 g / 12.48 oz confectioners' sugar, sifted

267 g / 9.42 oz egg whites

202 g / 7.13 oz cake flour, sifted

1. Preheat a convection oven to 160°C / 325°F.
2. Cream the butter and sugar until light and fluffy, 3 to 4 minutes. Add the egg whites slowly, scraping down the bowl between additions. Add the flour on low speed until just incorporated.
3. Spread 20 g / .71 oz of the batter into a 10 cm / 4 in circular stencil on a nonstick rubber mat with a small offset spatula. Repeat until the nonstick rubber mat is filled with circles (about 12 circles per mat), leaving 2.5 cm / 1 in between each circle.
4. Bake until golden brown, about 6 minutes, and shape around a metallic cornet mold 10 cm / 4 in long by 3.75 cm / 1.5 in diameter while hot. If the cones cool off and become too firm to shape around the tube, return the sheet pan with the cones to the oven to soften them. Repeat with the remaining batter.
5. Reserve the finished cones in an airtight container at room temperature. Discard after 2 days.

NOTE For Oatmeal Cones, weigh 75 g / 2.64 oz oatmeal. Sprinkle some of the oatmeal evenly across the batter in Step 2. Repeat with remaining tuiles. Proceed with the recipe as directed.

For Almond Cones, weigh 50 g / 1.76 oz finely chopped, toasted almonds. Sprinkle some of the almonds evenly across the batter in Step 2. Repeat with the remaining tuiles. Proceed with the recipe as directed.


From left to right, Mascarpone Sherbet Cone (page 162), Praline Ice Cream Cone (page 157), Burnt Sugar Cone (page 160), Turrón Gelato Cone (page 157), and Oatmeal Ice Cream Cone (page 157)

Burnt Sugar Ice Cream Cones

YIELD 10 PORTIONS

COMPONENTS

200 g / 7.05 oz BURNT SUGAR ICE CREAM BASE (page 355)

10 CHOCOLATE CONES

5 g / .18 oz fleur de sel

ASSEMBLY

1. Churn or pacotize the ice cream and harden slightly in the freezer.
2. Place 3 cm / 1.25 in demi-sphere fleximolds in the freezer. The mold will need at least 20 demi-spheres (a full-size fleximold sheet of this size of demi-sphere will have between 64 and 72 in most cases).
3. Once slightly hardened, transfer the ice cream to a piping bag. Pipe into the demi-sphere molds. Even out the surface with an offset spatula. Return to the freezer to harden completely.
4. Once hardened, assemble the demi-spheres into spheres by fusing both spheres. Use your gloved hands to gently rub the demi-spheres where they touch. Place them back on the fleximold; the mold holds the spheres in place. Place in the freezer to harden, then cover with plastic wrap.
5. Place the cones on a perforated stand. Stainless steel, Plexiglas, Lucite, or silver are very good materials to use.
6. Place 1 sphere of the ice cream onto each cone. Garnish with a pinch of the fleur de sel.
7. Since the spheres have hardened in the freezer, it is a good idea to let them temper for 3 to 5 minutes to soften before serving.

Chocolate Cones

YIELD 1 KG / 2 LB 3.27 OZ (ABOUT 50 CONES)

200 g / 7.05 oz all-purpose flour

50 g / 1.76 oz Dutch-process cocoa powder

250 g / 8.82 oz butter, melted but cool

250 g / 8.82 oz confectioners' sugar, sifted

250 g / 8.82 oz egg whites, at room temperature

1. Preheat a convection oven to 160°C / 325°F.
2. Sift together the flour and cocoa powder.
3. Pour the butter into the bowl of an electric mixer fitted with the paddle attachment. Mix in the sugar on medium speed until thoroughly combined.
4. Add the flour and cocoa powder mix until thoroughly combined.
5. Add the egg whites slowly. Mix until a homogenous paste is obtained.
6. Refrigerate until firm, because it will be easier to spread when cold.
7. Spread 20 g / .71 oz of the batter in a 10 cm / 4 in circular stencil on a nonstick rubber mat with a small offset spatula. Repeat until the nonstick rubber mat is filled with circles (about 12 circles per mat), leaving 2.5 cm / 1 in between each circle.
8. Bake until firm, about 6 minutes. Shape around a metallic cornet mold 10 cm / 4 in long by 3.75 cm / 1.5 in diameter while hot. If the cones cool off and become too firm to shape around the tube, return the sheet pan with the cones to the oven to soften them. Repeat with the remaining batter.
9. Reserve the finished cones in an airtight container at room temperature. Discard after 2 days.

Mascarpone Sherbet Cones

YIELD 10 PORTIONS

COMPONENTS

200 g / 7.05 oz LEMON MASCARPONE SHERBET BASE (page 397)

10 PLAIN CONES (page 158)

10 pieces CHOCOLATE-COVERED PUFFED RICE

ASSEMBLY

1. Churn or pacotize the sherbet and harden slightly in the freezer.
2. Place 3-cm / 1.25-in demi-sphere fleximolds in the freezer. The mold will need to have at least 20 demi-spheres (a full-size fleximold sheet of this size of demi-sphere will have between 64 and 72 in most cases).
3. Once slightly hardened, transfer the sherbet to a piping bag. Pipe into the demi-sphere molds. Even out the surface with an offset spatula. Return to the freezer to harden completely.
4. Once hardened, assemble the demi-spheres into spheres by fusing both spheres. Use your gloved hands to gently rub the demi-spheres where they touch. Place them back on the fleximold; the mold holds the spheres in place. Place in the freezer to harden, then cover with plastic wrap.
5. Place the cones on a perforated stand. Stainless steel, Plexiglas, Lucite, or silver are very good materials to use.
6. Place 1 sphere of the ice cream onto each cone. Garnish with 1 puffed rice cluster.
7. Since the spheres have hardened in the freezer, it is a good idea to let them temper for 3 to 5 minutes to soften before serving.

Chocolate-Covered Puffed Rice

YIELD 225 G / 7.93 OZ (ABOUT 45 CLUSTERS)

100 g / 3.53 oz puffed rice cereal

25 g / .88 oz simple syrup (65° Brix)

100 g / 3.53 oz tempered bitter chocolate (72%)

1. Preheat an oven to 163°C / 325°F.
2. Combine the puffed rice cereal with the simple syrup in a bowl. Toss to coat the puffed rice.
3. Place the syrup-coated rice on a parchment paper–lined sheet pan in a single layer and bake until the moisture evaporates. The intention is to cover the puffed rice with a coat of sugar that will protect it from moisture.
4. Once the puffed rice has cooled, place it in a bowl and combine with the tempered chocolate. Adjust the amount if necessary, using only enough to coat the puffed rice, not to make clusters of it.
5. Using a demitasse spoon, scoop 5 g / .03 oz amounts of the chocolate-covered puffed rice onto a sheet pan lined with a nonstick rubber mat. Let the chocolate set at room temperature.
6. Reserve in an airtight container at room temperature. This can have a long shelf life if it never comes into contact with any kind of moisture. Taste daily to ensure freshness.

Meyer Lemon Granité with Huckleberry Compote and Crisp Meringues

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz HUCKLEBERRY COMPOTE

600 g / 1 lb 5.16 oz MEYER LEMON GRANITÉ (page 400)

30 CRISP MERINGUES

ASSEMBLY

1. Spoon 30 g / 1.06 oz of the compote on the plate.
2. Spoon 60 g / 2.11 oz of the granité on top of the compote.
3. Arrange 3 meringue disks on one side of the granité.
4. Drizzle 5 g / .17 oz of the huckleberry compote liquid on top of the granité.
5. Serve immediately.

Huckleberry Compote

YIELD 550 G / 1 LB 3.4 OZ

350 g / 12.34 oz huckleberries

100 g / 3.53 oz sugar

100 g / 3.53 oz water

Pinch salt

1. Combine all of the ingredients in a pot and bring to a slow boil, stirring occasionally. Do not boil too quickly or stir aggressively in order to keep the integrity of the huckleberries as much as possible (they burst easily). Turn the heat off.
2. Cool the huckleberry compote over an ice bath. Adjust the sweetness by adding more sugar if necessary.
3. Refrigerate. Reserve for 4 days maximum.

NOTE Huckleberries usually come with a few stems and leaves. Make sure to pick through them before cooking. This task can be very laborious but is necessary.

Crisp Meringues

YIELD 501 G / 1 LB 1.67 OZ (ABOUT 50 PORTIONS OR 150 DISKS)

167 g / 5.89 oz egg whites

167 g / 5.89 oz granulated sugar

167 g / 5.89 oz confectioners' sugar, sifted

1. Preheat a convection oven to 100°C / 212°F.
2. Whip the egg whites to medium peak, pour in the granulated sugar as the mixer whips, and continue whipping until the meringue has reached stiff peak.
3. Remove the bowl from mixer and fold in the sifted confectioners' sugar.
4. For the disks, using an offset spatula, spread the meringue over a sheet pan lined with a nonstick rubber mat lined with a chablon that has rounds 3.75 cm / 1.5 in in diameter and is .3 cm / .13 in thick. Remove the chablon before baking.
5. Bake with the vent open for 1 hour, or until the meringue is crisp. Reserve in an airtight container until needed. Keep silica gel packs with the meringues to absorb any excess moisture that might ruin the meringues. If properly cared for, meringues can have a very long shelf life.

NOTE A chablon is a rubber mat with round perforations; they vary in thickness and diameter.

Hot Coconut-Rum Colada with Passion Fruit "Shake"

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 OZ PASSION FRUIT SORBET base (page 380)

300 g / 10.58 oz COCONUT-RUM COLADA

30 g / 1.06 oz PASSION FRUIT SEEDS (page 138)

30 g / 1.06 oz TOASTED SHREDDED COCONUT

ASSEMBLY

1. Churn or pacotize the sorbet. Extrude into a piping bag fitted with a #4 fluted piping tip. Freeze.
2. Pour 30 g / 1.06 oz of the hot coconut-rum mix into a 60 ml / 2 fl oz glass.
3. Pipe the sorbet on top of the coconut-rum colada, in a rosette shape, until it sticks out about 2.5 cm / 1 in above the rim of the glass (approximately 30 g / 1.06 oz).
4. Place 5 to 7 passion fruit seeds on top of the sorbet.
5. Sprinkle a pinch of toasted coconut on top of the seeds.
6. Serve immediately.

NOTE Serve this dessert with a demitasse spoon, not a straw, so that when it is eaten, both items can combine on the spoon and the hot-cold effect can be enjoyed.

Coconut-Rum Colada

YIELD 500 G / 1 LB 1.64 OZ

435 g / 15.34 oz sweetened coconut milk

65 g / 2.29 oz dark rum

Combine both ingredients in a small pot. Bring to a boil and serve immediately or reserve in a thermal container for service. Discard any liquid from the container after service. If not using immediately, cool the liquid and reserve refrigerated for up to 4 days.

Toasted Shredded Coconut

YIELD 25 G / .88 OZ

30 g / 1.06 oz unsweetened shredded coconut

1. Preheat a convection oven to 325°F/163°C. Line a sheet pan with a nonstick rubber mat (parchment paper will not stay in place in a convection oven if it is not weighed down properly).
2. Spread the coconut evenly onto the prepared sheet pan.
3. Bake until light brown and aromatic, about 6 minutes.
4. Reserve in an airtight container at room temperature. If properly stored, it will keep for up to 1 month.

Grapefruit and Mint Sorbet with Grapefruit Confit

YIELD 10 PORTIONS

COMPONENTS

50 segments GRAPEFRUIT CONFIT

600 g / 1 lb 5.16 oz GRAPEFRUIT AND MINT SORBET (page 393)

30 g / 1.06 oz MINT SYRUP

ASSEMBLY

1. Remove 5 grapefruit segments from the syrup and let the excess drip off. Arrange the segments in a thick glass bowl.
2. Scoop a 60 g / 2.11 oz quenelle of the sorbet on top of the grapefruit segments.
3. Drizzle about 3 g / .11 oz of the mint syrup on top of the quenelle only and serve immediately.

Grapefruit Confit

YIELD 50 SEGMENTS

50 grapefruit segments (or suprêmes)

500 g / 1 lb 1.64 oz simple syrup (50° Brix)

1. Combine the grapefruit segments with the simple syrup in a pot. Simmer (do not boil) for 5 minutes.
2. Cool the confit over an ice bath and reserve refrigerated in the liquid. Discard after service.

NOTES Suprêmes are grapefruit (or any other citrus) segments with no skin, pith, or pits. Use a very sharp knife when cutting the suprêmes out of the fruit so as to get a clean look.

Do not bring the syrup to a boil, because the fruit is very delicate and it might lose its shape.

Use various types of grapefruit (ruby and white, for example) in combination for a better finished presentation.

If desired, cook the supremes with other flavors, such as vanilla beans, spices, and so on, to infuse their flavor.

Mint Syrup

YIELD 250 G / 8.81 OZ

4 kg / 8 lb 13.09 oz water

20 g / .71 oz salt

200 g / 7.05 oz mint leaves

50 g / 1.76 oz glucose syrup, or as needed

1. Bring the water and salt to a rolling boil in a large pot.
2. Blanch the mint leaves for 8 to 10 seconds, stirring them gently so that they get evenly blanched.
3. Shock the leaves in an ice bath, stirring so that they chill quickly.
4. Strain the leaves out of the ice bath. Squeeze the excess water off with your hands and pat dry with paper towels.
5. Place half of the leaves in a blender with the glucose syrup. The glucose should cover the leaves. Add more glucose if necessary.
6. Blend on medium speed for about 1 minute, then add the remaining mint and blend for 1 more minute. If the mint is not blending properly, add a little more glucose.
7. Once a smooth purée is obtained, remove from the blender and let the purée drain through a fine-mesh strainer for 2 hours.
8. Refrigerate the resulting syrup. Discard after 2 days.

Strawberry Gelato with Toasted Brioche Croutons and 50-Year-Old Balsamic Vinegar

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz MACERATED STRAWBERRIES

300 g / 10.58 oz STRAWBERRY GELATO (page 367)

100 g / 3.53 oz TOASTED BRIOCHE CROUTONS

50 g / 1.76 oz 50-year-old balsamic vinegar

ASSEMBLY

1. Place a 3.75-cm / 1.5-in ring cutter at the center of the bowl (or desired vessel). Spoon 30 g / 1.06 oz of the macerated strawberries inside the ring. Pat them down with the spoon into a single layer.
2. Scoop a medium quenelle (30 g / 1.06 oz) of the gelato on top of the strawberries. Remove the ring.
3. Serve immediately.
4. The brioche croutons and the balsamic vinegar will be served tableside. Make sure they are set up and ready before service. Spoon 1 tablespoon of croutons on top of the quenelle (about 10 g / .35 oz) and 1 teaspoon of balsamic vinegar (about 5 mL) on top of the quenelle.

NOTE Balsamic vinegar is available aged in a variety of years (3, 5, 10, 12, 15, 18, 25, and so on, up to 100). The older it is, the more expensive and viscous (thick) it will be.

Macerated Strawberries

YIELD 400 G / 14.11 OZ

400 g / 14.11 oz strawberries

95 g / 3.35 oz sugar

5 g / .18 oz balsamic vinegar

1. Wash and de-stem the strawberries. Cut into small dice.
2. Combine with the sugar and balsamic vinegar. Let macerate for 2 hours.
3. Strain the liquid out.
4. Reserve the strawberries refrigerated. Discard after 2 days.

Toasted Brioche Croutons

YIELD 1.16 KG / 2 LB 8.9 OZ

488 g / 1 lb 1.22 oz bread flour

196 g / 6.9 oz eggs

13 g / .46 oz salt

73 g / 2.56 oz granulated sugar

6 g / .2 oz yeast

113 g / 4 oz milk, at 10°C / 50°F

246 g / 8.66 oz butter, soft

200 g / 7.05 oz confectioners' sugar

1. Combine the flour, eggs, salt, granulated sugar, yeast, and milk and mix on low speed with a dough hook attachment for 4 minutes with 62 g / 2.19 oz of the butter. Mix on high speed for 4 minutes. Start adding the rest of the butter in 4 stages while the mixer is on, scraping down the sides of the bowl between each addition. to the dough should achieve full gluten development, 30 to 45 minutes. Cover and place in the refrigerator overnight.
2. Prepare a 38-cm / 15-in Pullman loaf pan by spraying it with nonstick cooking spray.
3. Shape the dough into a bâtard loaf and place inside of the prepared mold. Place the lid over the mold and proof at room temperature for about 2 hours, or until doubled in size.
4. Meanwhile, preheat a convection oven to 190°C / 375°F.
5. Bake until the internal temperature of the loaf is 95°C / 200°F (use a probe thermometer to check the temperature, sliding the lid off the loaf pan just enough to fit the probe).
6. Once it is baked, remove the lid from the pan and unmold the baked loaf onto a cooling rack (do not let the brioche cool off in the pan, or it will shrink).
7. When the loaf has cooled, freeze it for 2 hours so that it will be easier to cut.
8. Trim the crust off the loaf and cut into a small dice. Place diced brioche in a bowl and toss with 200 g / 7.05 oz confectioners' sugar until it has coated the brioche evenly.
9. Spread the diced brioche onto a parchment paper–lined sheet pan in an even layer.
10. Toast in a 300°F/148°C convection oven at until golden brown and crisp. Cool on the sheet pan.
11. Reserve at room temperature in an airtight container. Discard after 4 days.

NOTE To test for full gluten development, do a "window" test. Take a small piece of dough and stretch it between both hands. The dough should form a very thin layer that is almost transparent and does not rip when stretched out. If the dough does not do this, mix for another minute and test again.

Black Mission Fig Gelato with Grana Padano Crisps and Roasted Black Mission Figs

YIELD 10 PORTIONS

COMPONENTS

200 g / 7.05 oz PORT GLAZE (page 172)

10 ROASTED BLACK MISSION FIGS

300 g / 10.58 oz ROASTED BLACK MISSION FIG GELATO (page 367)

10 GRANA PADANO CRISPS

ASSEMBLY

1. Brush 20 g / .71 oz of port glaze onto the desired plate.
2. Place a roasted fig on one end of the glaze. Slice a small piece off of another fig (about 3 mm / .11 in thick) and place the piece at the opposite end from the whole fig, directly on the glaze.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the gelato on top of the slice of fig.
4. Lean a cheese crisp on the quenelle and serve immediately.

Roasted Black Mission Figs

YIELD ABOUT 20 FIGS

550 g / 1 lb 3.4 oz Black Mission figs

400 g / 14.11 oz sugar

1 kg / 2 lb 3.27 oz port

1. Preheat a convection oven to 160°C / 325°F.
2. Cut off the stem and the bottom end of the figs. Cut an X on the top and the bottom of each fig. Scale the prepared figs to 500 g / 1 lb 1.64 oz.
3. Place each fig in a standing position in a hotel pan, making sure they do not touch each other. Sprinkle the sugar evenly over them. Pour the port on top of the figs. It should fill the pan a quarter of the way.
4. Roast until the figs are just tender, about 15 minutes.
5. Cool them in the pan they were roasted in.
6. Reserve the figs and roasting liquid at room temperature during service. Discard after 2 days.

NOTES Use very ripe figs. It is possible to add spices and other flavors to the figs before roasting (such as cinnamon, cloves, vanilla beans, orange zest, and so on).

Some of these figs can be used to anchor the ice cream; the liquid can be reserved for the glaze.

Grana Padano Crisps

YIELD 75 G / 6.17 OZ (10 CRISPS)

200 g / 7.05 oz Grana Padano

1. Preheat a convection oven to 160°C / 325°F. Line a sheet pan with a nonstick rubber mat.
2. Slice the cheese as thinly as possible and cut into 7.5-cm / 3-in squares. Place on the sheet pan and bake until golden brown, about six minutes. Cool to room temperature.
3. Store in an airtight container at room temperature. Discard after service if they are no longer crisp. If they remain crisp, they can hold for up to 2 days. It is not a good idea to refresh them in the oven once they have softened, since they will lose much of their flavor during the process.

Port Glaze

YIELD 300 G / 10.58 OZ

1 kg / 2 lb 3.27 oz tawny port

500 g / 1 lb 1.64 oz sugar

1. Cook the port and sugar over medium heat until the liquid has thickened to a sauce consistency, about 45 minutes.
2. Reserve under refrigeration. This liquid can keep up to 1 month.

Coconut-Lime Frappé

YIELD 10 PORTIONS

COMPONENTS

500 g /1 lb 1.64 oz COCONUT-LIME SORBET (page 389)

90 g /3.17 oz coconut milk

10 g / .35 oz white rum

3 g / .11 oz LIME ZEST POWDER (page 142)

ASSEMBLY

1. Combine the sorbet, coconut milk, and rum and blend on high speed until evenly smooth, about 30 seconds. Fill 60 ml / 2 fl oz glasses to the top.
2. Garnish with powdered lime zest. Serve immediately with a cocktail straw.

NOTE Instead of using a blender, the frappés can be pacotized. Place the liquid portion on top of the frozen component in the Pacojet beaker and pacotize. This method will yield a very smooth frappé that is more stable than those made in a blender. This was the method used in this book.

Raspberry Frappé

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz RASPBERRY SORBET (page 382)

100 g / 3.53 oz sparkling water

10 fresh raspberries

10 crystallized violets

ASSEMBLY

1. Combine the sorbet with the sparkling water and blend on high speed until evenly smooth, about 30 seconds. Fill 60 ml / 2 oz glasses to the top.
2. Garnish each glass with 1 raspberry and 1 crystallized violet. Serve immediately with a cocktail straw.

NOTE Instead of using a blender, the frappés can be pacotized. Place the liquid portion on top of the frozen component in the Pacojet beaker and pacotize. This method will yield a very smooth frappé that is more stable than those made in a blender. This is the method used in this book.

From left to right, Coconut-Lime Frappé (page 173), Granny Smith Apple and Wasabi Frappé (page 175), and Raspberry Frappé (page 173)

Granny Smith Apple and Wasabi Frappé

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz GRANNY SMITH APPLE AND WASABI SORBET (page 392)

100 g / 3.53 oz reserved Granny Smith apple juice (see Notes)

10 APPLE CHIPS

ASSEMBLY

1. Combine the sorbet with the juice and blend on high speed until evenly smooth, about 30 seconds. Fill 60 ml / 2 oz glasses to the top.
2. Garnish each glass with an apple chip. Serve immediately with a cocktail straw.

NOTES Instead of using a blender, the frappés can be pacotized. Place the liquid portion on top of the frozen component in the Pacojet beaker and pacotize. This method will yield a very smooth frappé that is more stable than those made in a blender. This was the method used in this book.

When making the Granny Smith Apple and Wasabi Sorbet, reserve 100 g / 3.53 oz of the apple juice for the frappé.

Apple Chips

YIELD 50 G / 1.76 OZ

50 g / 1.76 oz Granny Smith apples

250 g / 8.81 oz simple syrup (65° Brix)

1. Peel the apples and slice as thinly as possible using a slicer or mandoline. Reserve in a bowl or hotel pan covered with plastic wrap to delay oxidation.
2. Bring the syrup to a boil and pour over the apple slices. Make sure the apples are submerged in the syrup. Reserve the apples in the syrup under refrigeration until needed.
3. Preheat an oven to 75°C / 170°F.
4. Line a sheet pan with a nonstick rubber mat and place the apple slices on it in a single layer. Pat them dry with a paper towel.
5. Bake until the apple slices are firm, about 2 hours. Take them off the nonstick rubber mat while they are hot and let them cool on a marble surface. If they cool off on the rubber mat, it will be nearly impossible to take them off without breaking them.
6. Reserve in an airtight container at room temperature with silica gel packs. Discard once they begin to soften (they won't soften unless they are exposed to moisture, so their shelf life is directly related to this).

NOTES If desired, use a dehydrator instead of an oven.

Be careful when making the apple chips in a hot and/or humid environment. They will get tacky and soft.

Yuzu Sorbet with Cotton Candy and Black Sesame Seeds

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz YUZU SORBET (page 378)

10 g / .35 oz cotton candy (pink or white)

10 CRYSTALLIZED PINK ROSE PETALS (see Notes)

3 g / .11 oz toasted black sesame seeds

ASSEMBLY

1. Scoop 30 g / 1.06 oz of the sorbet into the desired vessel.
2. Top with cotton candy. Make sure to spread the cotton candy out to give it height and volume.
3. Place a petal on top of the cotton candy.
4. Sprinkle a pinch of black sesame seeds on top of the petal and serve immediately.

NOTES While it is possible to make your own cotton candy, the cost of the machine is very high, even for a small unit. If you can find a high-quality cotton candy source, use it for this dessert.

For the crystallized rose petals, see Crystallized Orange Blossom Petals on page 156. Substitute rose petals for the orange blossom petals.

Verjus Sorbet in Chilled Peach Soup with Crystallized Black Olives

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz VERJUS SORBET BASE (page 379)

50 g / 1.76 oz verjus

600 g / 1 lb 5.16 oz CHILLED PEACH SOUP BASE

100 g / 3.52 oz sparkling water

50 g / 1.76 oz CRYSTALLIZED BLACK OLIVES

ASSEMBLY

1. Churn or pacotize the sorbet base. Transfer to a piping bag and portion into a 3.75-cm / 1.5-in diameter demi-sphere fleximold mat, smoothing out the top with an offset spatula. Make 20 demi-spheres and place in the freezer to harden.
2. Once hardened, fuse 2 sorbet demi-spheres together by rubbing the edges where they touch with your gloved hands.
3. Return to the freezer. Once hardened, transfer to an airtight container and reserve frozen.
4. Place 5 g / .18 oz of verjus (about 1 tsp) in a bowl and freeze.
5. Once the verjus has hardened, take the bowl out of the freezer and torch the verjus for 1 second to melt it slightly.
6. Place the sorbet sphere on top of the verjus. The sorbet should re-freeze the verjus, anchoring it down to the bowl.
7. Sprinkle about 5 g / .17 oz of the crystallized olives on top of the sorbet. Let sorbet temper for 3 to 5 minutes.
8. Just before serving, combine 60 g / 2.12 oz of the peach soup with 10 g / .35 oz of the sparkling water, preferably one with large bubbles, and serve. This step is crucial, because if the sparkling water is added too soon, it will lose its fizz. Pour the soup into a small carafe.
9. Serve immediately. The soup will be poured tableside. It should be poured down the side of the bowl, away from the sorbet and close to the base of the bowl to avoid splatter.

Chilled Peach Soup

YIELD 1 KG / 2 LB 3.27 OZ

1.5 kg / 3 lb 4.91 oz peaches, very ripe

723 g / 1 lb 9.5 oz peach purée

25 g / .88 oz lemon juice

3 g / .11 oz salt

100 g / 3.53 oz Riesling

1. Score the peaches on the top and bottom with an X. Blanch them in boiling water and, once the skins start to peel off, transfer them to an ice bath.
2. Once cooled completely, remove the skins and pits. Blend with the purée, lemon juice, and salt. Pass through a fine-mesh strainer.
3. Combine 750 g / 1 lb 10.46 oz of the purée with the wine and reserve cold.

NOTE Make sure to use a good-quality wine to achieve the optimal flavor for this soup.

Crystallized Black Olives

YIELD 25 G / .88 OZ

50 g / 1.76 oz black olives, pitted

25 g / .88 oz sugar

1. Coarsely chop the olives and toss them in the sugar.
2. Place in a dehydrator until dry, about 36 hours.
3. Reserve in an airtight container at room temperature. If they are kept in a dry environment, they will last for up to 2 weeks.

Campari Granité with Pomelo Confit

YIELD 10 PORTIONS

COMPONENTS

90 segments POMELO CONFIT

600 g / 1 lb 5.16 oz CAMPARI AND ORANGE GRANITÉ (page 400)

ASSEMBLY

1. Take 9 segments out of the syrup they are kept in and gently pat them dry with a paper towel. Place the pomelo segments at the bottom of a flat bowl; arrange them in a 3 by 3 layer in an even rectangle with the segments slightly overlapping.
2. Spoon approximately 60 g / 2.11 oz of granité directly on top of the pomelo segments.
3. Serve immediately.

Pomelo Confit

YIELD 90 TO 100 PIECES

100 pomelo suprêmes

500 g / 1 lb 1.64 oz simple syrup (50° Brix)

1. Combine the pomelo suprêmes with the simple syrup in a pot. Simmer for 5 minutes.
2. Cool the confit over an ice bath and reserve refrigerated. Discard after service.

NOTES Use a very sharp knife when cutting the segments out of the fruit so as to get a clean look.

Do not bring the syrup to a boil, because the fruit is very delicate and it might lose its shape.

If desired, cook the segments with other items, such as vanilla beans, spices, and so on, to infuse their flavor.

Apple Tatin Ice Cream with Cinnamon Arlettes and Candied Honeycrisp Apples

YIELD 10 PORTIONS

COMPONENTS

10 wedges CANDIED HONEYCRISP APPLES

50 g / 1.76 oz crushed puff pastry

300 g / 10.58 oz APPLE TATIN ICE CREAM (page 357)

10 CINNAMON ARLETTES

10 g / .35 oz APPLE PEEL POWDER

ASSEMBLY

1. Place an apple wedge on the plate in a standing position.
2. Place a small amount of the crushed puff pastry next to the candied apple.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the crushed puff pastry.
4. Lean an arlette on the side of the quenelle in such a way that it touches the tip of the candied apple.
5. Sprinkle 1 g / .03 oz of the apple powder across the plate in a very straight and thin line.
6. Serve immediately.

Candied Honeycrisp Apples

YIELD 500 G / 1 LB 1.64 OZ (20 PORTIONS)

1.135 kg / 2 lb 8.02 oz sugar

340 g / 11.99 oz water

25 g / .88 oz lemon juice

500 g / 1 lb 1.64 oz Honeycrisp apples, peeled (peel reserved), cored, and cut into eighths

1. Prepare the sugar syrup by cooking the sugar, water, and lemon juice on very high heat until it has reached a temperature of 160°C / 325°F.
2. Add the apples to the syrup and reduce the heat to low. Cook very slowly until the pectin in the fruit has been activated and the fruit is translucent. Remove the apples from the liquid and place on silicone paper, a nonstick rubber mat, or a sheet pan lined with plastic wrap.
3. Reserve covered with plastic at room temperature for up to 1 week. They don't necessarily spoil, but they shrivel up and dry out, even when covered.

NOTE Use ripe apples. The best kind of apples to use for candying are those that have a high pectin content and low moisture content. The preferred apple is Honeycrisp, but Granny Smith or Ginger Gold apples can also be used. Use the leftover apples to make the ice cream.

Cinnamon Arlettes

YIELD 255 G / 9 OZ DOUGH (ABOUT 20 ARLETTES)

200 g / 7.05 oz puff pastry, very cold (almost semi-frozen)

50 g / 1.76 oz confectioners' sugar

5 g / .18 oz ground cinnamon

1. Roll out the dough to about 2 mm / .08 in. Let the dough relax in the freezer for 30 minutes. Roll it again to 2 mm / .08 in because it will have relaxed and pulled in. Let it relax in the freezer for 30 minutes.
2. Combine the sugar and cinnamon thoroughly. Reserve.
3. Cut the pastry into rectangles 5 cm / 2 in by 10 cm / 4 in. Relax the dough and freeze until firm.
4. Preheat an oven to 200°C / 392°F.
5. Place the puff pastry rectangles on a sheet pan lined with silicone paper, and dust them with the sugar and cinnamon mixture using a small sifter, giving them a uniform, thin layer. Cover the arlettes with another sheet of silicone paper, then place an upside-down cooling wire rack on top of the paper.
6. Bake until golden brown, about 12 minutes.
7. There will be some leftover puff pastry from cutting the arlettes. Bake them as you would the arlettes. Once they are baked and cool, gently crush them. These pieces will be used to anchor down the ice cream.
8. Reserve in an airtight container at room temperature for up to 2 days.

NOTE It is very important to always handle puff pastry only when it is very cold, almost frozen, because it is less susceptible to losing its shape and becoming damaged during handling.

Apple Peel Powder

YIELD 50 G / 1.76 OZ

100 g / 3.53 oz reserved peel from the Honeycrisp apples

1. Dry the apple peel in a dehydrator or very low temperature oven (below 100°C / 212°F), about three hours.
2. Once they are dry and cool, grind them in a coffee grinder.
3. Sift through a fine-mesh strainer.
4. Reserve in an airtight container at room temperature. If they are properly dehydrated and kept in a dry environment, they will last up to 1 month.

Espresso Semifreddo with Lemon Curd Chiboust and Chocolate Biscotti

YIELD 10 PORTIONS

COMPONENTS

450 g / 15.87 oz ESPRESSO SEMIFREDDO BASE (page 405)

450 g / 15.87 oz LEMON CURD CHIBOUST

10 CHOCOLATE BISCOTTI

ASSEMBLY

1. Fill a hotel pan with rice. Place ten 120 ml / 4 fl oz glasses in the rice at a 45-degree angle.
2. Pipe about 45 g / 1.59 oz of semifreddo into each glass. Tap the glasses down (at the same 45-degree angle) so that the espresso semifreddo evens out to a smooth surface. Return the glasses to the hotel pan at the same angle.
3. Reserve frozen until needed.
4. Take the semifreddo out of the freezer. Pipe 45 g / 1.59 oz of the lemon chiboust into each glass, filling it all the way to the top. The chiboust should be the only thing seen from the top of the glass.
5. Torch the chiboust for a few seconds until the top is golden brown.
6. Place the biscotti directly across the top of the glass.
7. Temper for 4 to 5 minutes and serve.

Lemon Curd Chiboust

YIELD 1.04 KG / 2 LB 4.67 OZ

LEMON CURD

125 g / 4.41 oz sugar

125 g / 4.41 oz lemon juice

125 g / 4.41 oz eggs

125 g / 4.41 oz butter, soft

ITALIAN MERINGUE

360 g / 12.7 oz sugar

180 g / 6.35 oz egg whites, at room temperature

1 g / .03 oz cream of tartar

1. **FOR THE LEMON CURD:** Combine the sugar, lemon juice, and eggs in a bowl and cook over a double boiler, whisking constantly until the mixture reaches 80°C / 175°F.
2. Take off the heat and transfer to a mixer bowl. Whip on high speed and add the butter in small pieces. Whip until the curd has cooled to room temperature.
3. Reserve at room temperature if the Italian meringue is to be made immediately after; otherwise, refrigerate immediately.

4. **FOR THE MERINGUE:** Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated.
5. Begin whipping the egg whites and cream of tartar on medium speed at the same time that the sugar begins cooking.
6. Cook the sugar to 121°C / 250°F (also known as the soft ball stage).
7. When the sugar has reached 115°C / 240°F, increase the speed of the mixer to high.
8. When the sugar reaches 121°C / 250°F, take the pot off the heat.
9. Wait for the egg whites to reach stiff peak, and immediately after pour the sugar down the side of the bowl and whip until the foam has cooled to room temperature.
10. **FOR THE LEMON CHIBOUST:** Fold the Italian meringue gently into the lemon curd. If the curd was refrigerated, it needs to be warmed up slightly in order to fold into the meringue smoothly. Pour into a piping bag. Reserve under refrigeration until needed.

Chocolate Biscotti

YIELD 831 G / 1 LB 13.31 OZ

225 g / 7.94 oz eggs

240 g / 8.47 oz sugar

4 g / .14 oz salt

308 g / 10.86 oz bread flour

50 g / 1.76 oz Dutch-process cocoa powder

4 g / .14 oz baking powder

1. Preheat a convection oven to 160°C / 325°F.
2. Combine the eggs and sugar and whip until light and thick.
3. Blend the dry ingredients together thoroughly.
4. Using a paddle, add the dry ingredients to the egg mixture and mix until incorporated.
5. Divide dough into 2 equal portions.
6. Roll into 2 equal-weight logs the length of a half sheet pan (using only as much flour as needed). Dust off any excess flour on the top and bottom of the log.
7. Bake for 15 to 20 minutes. Remove from the oven and freeze so that it cuts cleanly.
8. Cut the strip on the bias in 6-mm- / .25-in-thick slices.
9. Place the sliced cookies back in the oven and bake for 6 to 8 minutes. Halfway through, flip them over, allowing them to become crisp.
10. Reserve in an airtight container at room temperature. Discard after 1 week.

Kaffir Lime Leaf Bombe with Bubble Tapioca and Lime Zest Powder

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz BUBBLE TAPIOCA

10 KAFFIR LIME LEAF BOMBE DEMI-SPHERES

5 g / .18 oz LIME ZEST POWDER (page 142)

ASSEMBLY

1. Spoon 30 g / 1.06 oz of tapioca onto the plate.
2. Place a bombe next to the tapioca.
3. Place a pinch of powdered lime zest on top of the bombe.
4. Temper for 4 to 5 minutes and serve.

Bubble Tapioca

YIELD 400 G / 14.11 OZ

1.2 kg / 2 lb 10.33 oz water

200 g / 7.05 oz black pearl parcooked bubble tapioca

100 g / 3.53 oz simple syrup (50° Brix)

1. Bring the water up to a rolling boil; add the tapioca pearls and stir to make sure they don't stick together or to the bottom of the pot.
2. Lower the heat to medium and continue to cook, covered, for 20 more minutes.
3. Remove from heat and let stand for 25 minutes, or until cooked through (they will be chewy).
4. Rinse the tapioca pearls with cold water and drain thoroughly.
5. Keep tapioca pearls in a container covered with the simple syrup. Reserve refrigerated. Discard after 24 hours.

Kaffir Lime Leaf Bombe Demi-Spheres

YIELD 10 ASSEMBLED BOMBES

500 g / 1 lb 1.64 oz KAFFIR LIME LEAF BOMBE (page 407)

200 g / 7.05 oz WHITE COUVERTURE SPRAY

1. Pipe the bombe into 5-cm / 2-in diameter demi-sphere fleximolds. Even out the surface with an offset spatula. Place in the freezer until hardened.

2. Once the bombe has hardened, unmold from the fleximolds. Adhere one dome to the other by placing a drop of white chocolate between them. Offset them; they should not form a perfect sphere. They should be offset by at least 1.25 cm / .5 in.
3. Return to the freezer.
4. Place the white chocolate spray in a spray gun and spray the assembled bombes until they are completely coated.
5. Return to the freezer until needed.

White Couverture Spray

YIELD 300 G / 10.58 OZ

200 g / 7.05 oz white couverture

100 g / 3.53 oz cocoa butter

Bring the chocolate and cocoa butter to 38°C / 100°F over medium heat. Reserve warm.

Frozen Basil Soufflés with Crystallized Basil Leaves

YIELD 10 PORTIONS

COMPONENTS

10 FROZEN BASIL SOUFFLÉ BÂTONS

50 CRYSTALLIZED BASIL LEAVES

ASSEMBLY

1. Place a bâton on a plate.
2. Place 5 crystallized basil leaves carefully on the soufflé and the plate.
3. Let the soufflé temper for 4 to 5 minutes and serve.

Frozen Basil Soufflé Bâtons

YIELD 500 G / 1 LB 1.64 OZ

500 g / 1 lb 1.64 oz FROZEN BASIL SOUFFLÉ BASE (page 408)

300 g / 10.58 oz WHITE COUVERTURE SPRAY (page 188)

1. Line a half sheet pan with a nonstick rubber mat. Place a 38 cm / 15 in by 25 cm / 10 in wide by 2 cm / 0.75 in Plexiglas frame on the mat and freeze.
2. Pour the soufflé base into the prepared pan and even out the top with an offset spatula so that it is flush with the frame. Place in the freezer until hardened.
3. Once hardened, take the frame off the soufflé (run a paring knife along the inside border, being careful to not cut the rubber mat). Flip the soufflé over onto an acetate sheet of the same size as the soufflé and peel the rubber mat off.
4. Cut into rectangles 1.25 cm / .5 in by 12.5 cm / 5 in. Return to the freezer.
5. Set up the spraying area. Place the chocolate spray in a spray gun and spray the soufflés until they are completely coated.
6. Reserve in an airtight container in the freezer.

NOTE Be gentle when handling the sprayed soufflés, since the coating is easily damaged. Use a small offset spatula to move them from the freezer to the plate.

Crystallized Basil Leaves

YIELD 50 TO 60 LEAVES

50 to 60 basil leaves (the smallest leaves)

50 g / 1.76 oz pasteurized egg whites, or as needed

100 g / 3.52 oz bakers' sugar, or as needed

1. Using a smooth artist's brush, brush each basil leaf on both sides with a thin layer of egg whites, then gently toss in the sugar. Pick the leaves up by the stems and let them dry on a sheet pan lined with parchment paper at room temperature for at least 4 hours before using.
2. Reserve in an airtight container at room temperature. Discard after 4 days.

Frozen Apricot Mousse with Praline Croquant and Pistachio Financier

YIELD 10 PORTIONS

COMPONENTS

420 g / 14.81 oz FROZEN APRICOT MOUSSE BASE (page 408)

10 slices PISTACHIO FINANCIER

10 poached APRICOT HALVES

10 pieces PRALINE CROQUANT

ASSEMBLY

1. Place three 15-cm / 6-in cake rings on a sheet pan lined with a nonstick rubber mat. Line the inside of the ring with acetate. Line the outside of a 7.5-cm / 3-in ring with acetate and place it inside the larger ring. Make sure that it is centered. Secure the middle ring by taping it to the larger ring on top once it is centered. Freeze.
2. Pour the apricot mousse base into a piping bag. Pipe it between the larger ring and the smaller ring so that it is 1 cm / .4 in thick. Tap the sheet pan down so that the mousse settles into an even layer. Place the mousse in the freezer to harden.
3. Once the mousse has frozen, take the rings and the acetate off. Cut the mousse in quarters using a knife that has been dipped in hot water and dried. Transfer to an airtight container and freeze until needed.
4. Place a pistachio financier on the plate.
5. Place 1 apricot mousse quarter inside the groove on the financier, so it sits firmly on the plate and leans on the financier in an upright position.
6. Place a poached apricot half to the left side of the financier.
7. Lean a piece of praline croquant on the mousse.
8. Let the mousse temper for 3 to 4 minutes and serve.

Pistachio Financier

YIELD 1 KG / 2 LB 3.27 OZ

123 g / 4.34 oz pistachio flour

123 g / 4.34 oz all-purpose flour

286 g / 10.09 oz confectioners' sugar

263 g / 9.28 oz egg whites

205 g / 7.23 oz brown butter, cooled to room temperature

1. Combine the dry ingredients in the bowl of an electric mixer fitted with the paddle attachment. Pour in the egg whites in several additions, scraping down the bowl between each addition. Mix until just combined. Scrape down the sides of the bowl. Slowly add the butter until just incorporated.
2. Reserve refrigerated until needed. Not only is it easier to work with when cold, but chilling also extends its shelf life.
3. Preheat a convection oven to 160°C / 325°F.

4. Spray a rectangular cake mold 5 cm / 2 in by 38 cm / 15 in by 7.5 cm / 3 in with nonstick cooking spray. Pipe the financier batter almost all the way up the mold.
5. Bake until firm to the touch at the center of the financier, about 10 minutes.
6. Remove from the oven and cool in the mold.
7. Once it has cooled, trim the crown off the financier so the top of the cake is even with the cake mold.
8. Take the financier out of the mold and freeze for 1 hour, then cut into slices 2.5 cm / 1 in by 7.5 cm / 3 in. Cut a groove (1 cm / .4 in wide by 1.25 cm / .5 in deep) at the right side of each slice.
9. Reserve in an airtight container at room temperature. Discard after service.

Poached Apricots

YIELD 10 APRICOT HALVES

10 dried apricot halves (if they are whole, cut them in half lengthwise)

400 g / 14.1 oz Moscato d'Asti

400 g / 14.1 oz simple syrup (50° Brix)

1. Simmer the apricots in the wine and syrup over medium-high heat until tender, about 45 minutes.
2. Reserve in the liquid at room temperature. Discard after 2 days.

Praline Croquant

YIELD 310 G / 10.93 OZ

250 g / 8.82 oz isomalt

10 g / .35 oz water

50 g / 1.76 oz praline paste

1. Place a nonstick rubber mat on a marble surface.
2. Cook the isomalt and the water to 155°C / 310°F over high heat. Remove from the heat and stir in the praline paste. Pour onto the nonstick rubber mat.
3. Put on 3 pairs of latex gloves and start pulling the sugar when it has cooled down (if it is too hot it won't pull very well). Pull the sugar so that it is very thin, then cut into pieces that are about 7.5 cm / 3 in long, using scissors. Keep in mind that thick pieces are unpleasant to eat. It is impossible to get identical shapes, but try to get them as uniform as possible.
4. If the sugar hardens, place the rubber mat on a sheet pan and warm it up in a hot oven for a few seconds. Once the thicker pieces have softened slightly, pull them so they are very thin.
5. Reserve in an airtight container with silica gel packets (to prevent the sugar from absorbing moisture) at room temperature. If they are kept in a very dry environment, they can last indefinitely.

Frozen Gingerbread Spice Mousse with Gingerbread, Crystallized Ginger, and Molasses

YIELD 10 PORTIONS

COMPONENTS

600 g / 1 lb 5.15 oz FROZEN GINGERBREAD-SPICE MOUSSE BASE (page 409)

10 slices GINGERBREAD

100 g / 3.53 oz molasses

10 g / .35 oz crystallized ginger julienne

ASSEMBLY

1. Line 10 PVC tubes 2.5 cm / 1 in by 7.5 cm / 3 in with acetate. Place them on a sheet pan in a standing position and place them in the freezer.
2. Pour the mousse base into a piping bag. Pipe the mousse into the PVC tubes. Even out the top with an offset spatula and place in the freezer to harden.
3. Reserve in the PVC tube, frozen in an airtight container until needed.
4. Place a gingerbread slice on the plate.
5. Drizzle 10 g / .35 oz molasses on top of the cake and spoon a few drops around the plate.
6. Unmold the mousse from the PVC tube, take the acetate off, and place it next to the gingerbread.
7. Place about 1 g / .04 oz of crystallized ginger on top of the mousse in a straight line.
8. Let the mousse temper for 3 to 4 minutes and serve.

Gingerbread

YIELD 2 KG / 4 LB 6.54 OZ

880 g / 1 lb 15.04 oz eggs

493 g / 1 lb 1.6 oz dark brown sugar

6 g / .21oz salt

246 g / 8.68 oz bread flour

246 g / 8.68 oz pastry flour

12 g / .41 oz ground ginger

6 g / .21 oz ground cinnamon

3 g / .11 oz ground cloves

2 g / .07 oz ground nutmeg

23 g / .82 oz crystallized ginger, finely diced

83 g / 2.92 oz butter, melted but cool

1. Prepare 2 rectangular cake molds 2.5 cm / 1 in by 38 cm / 15 in by 7.5 cm / 3 in, spraying with nonstick cooking spray and placing on a full-size sheet pan.
2. Combine the eggs, sugar, and salt in a 20-qt mixer bowl. Place over a hot water bath and bring the contents of the bowl up to 48°C / 120°F while whisking slowly (don't whisk too vigorously or else too much air will be incorporated and it will take too long for the ingredients to warm up).
3. Transfer the bowl to a mixer and whip on high speed for 5 minutes, then turn the speed down to medium and whip for 15 more minutes.
4. Meanwhile, preheat a convection oven to 350°F (open the vents and turn the fan speed down to low).
5. Sift the bread flour, pastry flour, and ground spices together twice.
6. After the eggs have whipped to full volume, take the bowl off the mixer and gently fold in the dry ingredients.
7. Fold in the butter carefully (so as not to deflate the sponge) and then quickly fold in the diced ginger.
8. Immediately pour the batter into the prepared molds and spread out evenly with an offset spatula. Bake until golden brown and the sponge springs back when gentle pressure is applied to it at the center of the pan.
9. Cool to room temperature.
10. Once it has cooled, trim the crown off the sponge so that it is flush with the top of the mold. Take the molds off.
11. Freeze the gingerbread for 2 hours and cut into slices 7.5 cm / 3 in by 1.25 cm / .5 in.
12. Reserve in an airtight container at room temperature. Discard any leftovers after service.

DESSERTS

Milk and Cookies

YIELD 10 PORTIONS

COMPONENTS

450 g / 15.87 oz WHOLE MILK ICE (page 400)

10 CHOCOLATE SANDWICH COOKIES

ASSEMBLY

1. Scrape 45 g / 1.59 oz of whole milk ice into a 30 mL / 1 fl oz glass. The ice should come about 2.5 cm / 1 in above the rim of the glass.
2. Place 1 assembled cookie on the rim of the glass and serve immediately.

Chocolate Sandwich Cookies

YIELD 1 KG / 2 LB 3.27 OZ COOKIES; 500 G / 1 LB 1.64 OZ FILLING

COOKIES

361 g / 12.73 oz butter, at room temperature

363 g / 12.8 oz sugar

331 g / 11.68 oz flour

92 g / 3.25 oz cocoa powder

2 g / .07 oz baking powder

1 g / .03 oz salt

COOKIE FILLING

125 g / 4.4 oz heavy cream

375 g / 13.22 oz white chocolate, pistoles or chopped

1. FOR THE COOKIES: Preheat a convection oven to 160°C / 325°F.
2. Cream the butter with sugar in a mixer using the paddle attachment for 3 minutes or until softened.
3. Meanwhile, sift the dry ingredients. Add them to creamed butter and mix until just combined. The mixture will form a ball.
4. Shape into a disc, wrap, and refrigerate for 1 hour. Roll out the dough to .3 cm / .13 in thick and freeze.
5. Cut out rectangles 2 cm / .75 in by 8 cm / 3 in, dock with a fork in a symmetrical pattern, and place on a sheet pan lined with parchment paper. Freeze for 10 minutes.
6. Bake for 7 to 8 minutes, or until the dough has no wet spots. Cool to room temperature and reserve.
7. FOR THE FILLING: Bring the heavy cream to a boil and pour over the chocolate. Stir until a homogenous mass is obtained.

8. When the filling has set (when it has cooled and is firm), pour it into a piping bag and pipe onto half of the shortbread cookies. Assemble the cookies by topping the filling with the remaining cookies.
9. Reserve in an airtight container at room temperature. Discard any leftover assembled cookies after service.

Spice Ice Cream with Gingerbread and Chocolate Mousse Timbale

YIELD 10 PORTIONS

COMPONENTS

10 GINGERBREAD AND CHOCOLATE MOUSSE TIMBALES

100 g / 3.53 oz BITTER CHOCOLATE SAUCE

300 g / 10.58 oz SPICE ICE CREAM (page 371)

20 curved CHOCOLATE TRIANGLES

ASSEMBLY

1. Remove the timbales from the refrigerator and temper for 10 to 15 minutes before serving. This will improve the flavor and texture of the mousse because it won't be so cold.
2. Remove the acetate strips from the timbales. They should snap into a perfect straight line right where both ends meet.
3. Place a timbale on the plate. Do not use your fingers; they will leave prints on the chocolate; use an offset spatula and gloves if you need to touch it.
4. Spoon 10 g / .35 oz of the chocolate sauce onto the plate.
5. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the timbale. It should sit on the bottom curve of the curved chocolate triangles, almost like the garnish is cradling the ice cream.
6. Place 2 curved chocolate triangles on the timbale; they will stick to the glaze. Try to give it as much height as possible. Serve immediately.

Gingerbread and Chocolate Mousse Timbales

YIELD 2 KG / 4 LB 6.55 OZ

GINGERBREAD GÉNOISE

880 g / 1 lb 15.04 oz eggs

493 g / 1 lb 1.38 oz dark brown sugar

6 g / .21 oz salt

246 g / 8.68 oz bread flour

246 g / 8.68 oz pastry flour

12 g / .42 oz ground ginger

6 g / .21 oz ground cinnamon

3 g / .11 oz ground clove

2 g / .07 oz ground nutmeg

83 g / 2.93 oz butter, melted but cool

23 g / .81 oz crystallized ginger, finely diced

BITTER CHOCOLATE MOUSSE

405 g / 14.29 oz eggs

166 g / 5.86 oz sugar

536 g / 1 lb 2.19 oz bitter chocolate (64%)

893 g / 1 lb 15.5 oz heavy cream (40% fat)

SHINY CHOCOLATE GLAZE

41 g / 1.45 oz gelatin sheets

832 g / 1 lb 13.35 oz sugar

441 g / 15.56 oz water

250 g / 8.82 oz Dutch-process cocoa powder

249 g / 8.78 oz crème fraîche

187 g / 6.6 oz 64% chocolate

1 kg / 2 lb 3.27oz bitter chocolate (64%)

1. **FOR THE GÉNOISE:** Combine the eggs, sugar, and salt in a 20-qt mixer bowl. Place over a hot water bath and bring the contents of the bowl up to 48°C / 120°F while whisking slowly (don't whisk too vigorously or else too much air will be incorporated and it will take too long for the ingredients to warm up).
2. Transfer the bowl to a mixer fitted with the whip attachment and whip on high speed for 5 minutes, then turn the speed down to medium and whip for 15 more minutes.
3. Meanwhile, preheat a convection oven to 176°C / 350°F, open the vents, and turn the fan speed down to low.
4. Grease a full-size sheet pan and line it with parchment paper. If desired, line the sheet pan with a nonstick rubber mat; if so, grease only the border of the pan.
5. Sift the flours and ground spices together twice.
6. After the eggs have whipped to full volume, take the bowl off the mixer and gently fold in the dry ingredients.
7. Fold in the butter carefully (so as not to deflate the génoise) and then quickly fold in the diced crystallized ginger.
8. Immediately pour the batter into the prepared sheet pan and spread out evenly with an offset spatula. Bake until golden brown and the sponge springs back when gentle pressure is applied to it at the center of the pan, about 15 minutes.
9. Cool to room temperature. Freeze the génoise for 2 hours and cut with a 2.5-cm / 1-in round cutter. One round will be used per portion.
10. Reserve in an airtight container in refrigeration.
11. **FOR THE MOUSSE:** Line 10 stainless steel cylinders or PVC tubes 5 cm / 2 in by 2.5 cm / 1 in diameter with acetate.
12. Place one of the cutout gingerbread cake rounds inside each of the prepared cylinders.
13. Whip the eggs and sugar over a double boiler until the mixture is slightly thick and has reached 60°C / 140°F. Keep stirring but not whipping. Do not allow the mixture to exceed 63°C / 145°F, because the egg will start cooking. Let it cool until it reaches room temperature (about 21°C / 70°F). Do not let it get too cold because the chocolate will be folded in soon, and if this egg mix is cold, the chocolate will set.
14. Melt the chocolate over a double boiler. Let it cool to 37°C / 100°F.
15. Whip the cream to medium-stiff peaks, making sure it's not over- or under-whipped. Reserve refrigerated until needed.

16. Whisk the bitter chocolate into the egg mixture. Fold in the whipped cream in 2 additions. This will help maintain volume; if the cream is folded in all at once it won't be as light and airy.
17. Place the mousse in a piping bag and portion immediately into the prepared cylinders.
18. Even out the top with a small offset spatula. Freeze for 1 hour.
19. FOR THE GLAZE: Bloom the gelatin in ice-cold water. In a saucepan, bring the sugar, water, cocoa powder, and crème fraîche to a boil. Once it boils, add the chocolate and stir until dissolved. Squeeze out the excess water from the gelatin and add to the mixture. Stir until the gelatin is melted.
20. Strain through a fine-mesh strainer. Cool the glaze to 38°C / 100°F before applying or reserve refrigerated. Use a double boiler to re-warm if necessary.
21. FOR THE TIMBALES: Temper 1 kg / 2 lb 3.27 oz of dark chocolate (64%).
22. Remove the frozen mousse from the cylinders and peel the acetate off.
23. Set 10 acetate strips to wrap the timbales on a sheet of parchment paper. They should be as tall as the stainless steel ring and long enough to wrap around the unmolded timbales with about 2.5 cm / 1 in excess to overlap slightly.
24. Pipe the tempered chocolate onto the acetate sheets. Spread into a thin layer using a small offset spatula. Wrap only 4 or 5 timbales at a time. Otherwise, the chocolate might set on the acetate strip and you won't be able to wrap the timbale.
25. Once the chocolate has been spread on the acetate sheet, wrap it around the timbale. Push the first timbale to the border of the sheet pan it is on, pressing the ends against the frame so the strip won't open up. Do the same with the remaining timbales. Refrigerate.
26. Warm the shiny glaze to 38°C / 100°F over a hot water bath. Pour the glaze on top of each timbale. It should dome on top. If it is too cold, it will ripple and set that way, and if it's too hot it will look concave. It is crucial to have the right temperature to obtain the domed look.
27. Reserve refrigerated until needed.

Chocolate Triangles

YIELD ABOUT 30 TRIANGLES

100 g / 3.53 oz tempered dark chocolate (64%)

1. Pour the tempered chocolate onto an acetate strip cut to 17.5 cm / 7 in by 30 cm / 12 in and spread to a thin layer. Pick the acetate up and move it away from where it was to get a clean border.
2. When the chocolate is partially set, use a ruler and the back of a paring knife to cut long, thin triangles, from the top to the bottom of the acetate. They should be 1.75 cm / .5 in wide at the base. Work quickly, because once the chocolate sets too much it will crack when it is cut.
3. Place the acetate on a PVC tube 6.25 cm / 2.5 in by 30 cm / 12 in, with the chocolate facing the tube. Tape the acetate to the tube so that it takes the shape of the tube exactly to form long, thin, curved triangles.
4. Let the chocolate set. Once it is set, leave it on the acetate until it is needed and then remove it from the PVC tube.
5. Keep the chocolate in a cool, dry place.

NOTE Thin chocolate garnishes require skill, but they are much more refined-looking than thick ones.

Bitter Chocolate Sauce

YIELD 500 G / 1 LB 1.64 OZ

56 g / 1.98 oz milk

111 g / 3.92 oz heavy cream

56 g / 1.98 oz glucose

167 g / 5.89 oz dark chocolate (64%)

111 g / 3.92 oz water

1. Bring the milk, heavy cream, and glucose to a boil over high heat.
2. Pour the mixture over the chocolate and water.
3. Blend with a beurre mixer until smooth.
4. Reserve under refrigeration until needed.

Frozen Blood Orange Parfait with Almond Lace Squares

YIELD 10 PORTIONS

COMPONENTS

1 kg / 2 lb 3.27 oz BLOOD ORANGE PARFAIT BASE (page 404)

30 ALMOND LACE SQUARES

10 g / .35 oz CANDIED ORANGE ZEST (page 130)

5 g / .18 oz ORANGE ZEST POWDER

ASSEMBLY

1. For the blood orange parfait squares: Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 1.75 cm / .5 in frame inside the sheet pan. Place the sheet pan in the freezer.
2. Pour the parfait base into the prepared frozen frame and spread out evenly using an offset spatula. Harden in the freezer.
3. Line a half sheet pan with a nonstick rubber mat and freeze.
4. Once the parfait has hardened, flip it onto another nonstick rubber mat. Place it back on the frozen sheet pan and peel off the top rubber mat. This will make the process easier, since the parfait won't stick to the new rubber mat as much. Using a 6.25-cm / 2.5-in square cutter, cut the parfait, dipping the cutter in warm (not hot) water each time to get a clean cut.
5. Once the parfait is cut, lift each square using a small offset spatula and transfer to the second frozen sheet pan lined with nonstick rubber mat. If the uncut parfait starts getting too soft, return it to the freezer. The parfait is directly exposed to the freezer ventilation, and this might cause excessive hardening and ice crystal formation, so don't let it sit in this condition for too long.
6. Once the parfait has hardened, wrap the sheet pan it is in and reserve frozen until needed.

7. Stand an almond square vertically on a plate. Stand a parfait square next to the tuile. Repeat with another tuile, another square, and 1 last tuile. The look is that of a vertical napoleon.
8. Torch the parfait for 1 or 2 seconds to melt any frost that might be on it. Temper the parfait for 4 to 5 minutes before serving so it won't be too hard to eat.
9. Spoon 1 g / .035 oz of candied orange zest across the top of the napoleon.
10. Sprinkle .5 g / .017 oz of the powdered zest in a straight, thin diagonal line on the plate and serve immediately.

Almond Lace Squares

YIELD 500 G / 1 LB 1.64 OZ

212 g / 7.48 oz sugar

45 g / 1.59 oz all-purpose flour

99 g / 3.49 oz almond flour

99 g / 3.49 oz water

45 g / 1.59 oz butter, melted but cool

1. Preheat a convection oven to 163°C / 325°F.
2. Combine all of the dry ingredients in a mixer bowl using a paddle.
3. Slowly pour in the water, then the melted butter.
4. Refrigerate the batter because once it firms up it is easier to spread.
5. Spread a thin layer of batter on a nonstick rubber mat, covering the entire surface (minus the borders).
6. Bake until golden brown, about 7 minutes.
7. Remove it from the oven and slide the rubber mat onto a marble surface or a stainless steel table. Wait a few seconds for it cool down, then cut into rectangles 3.75 cm / 1.5 in by 8.75 cm / 3.5 in. Use a ruler and a pastry cutter, not a knife, because otherwise the nonstick rubber mat will be cut.
8. If the tuile becomes too hard, return it to the oven to soften. This procedure may need to be repeated a few times before the amount of tuiles that is needed is obtained.
9. Reserve in an airtight container at room temperature. Reserve for up to 3 days, refreshing each day in a hot oven for 3 minutes.

Orange Zest Powder

YIELD: 10 G / .35 OZ

20 g / .71 oz orange zest

1. Microwave the zest in a microwave-safe container (preferably flat) for 10-second intervals until dry. Be sure to periodically stir the zest. When dry, let cool.
2. Grind in a spice grinder. Store at room temperature in an airtight container. If kept dry, it will last up to 1 month.

NOTES Zest oranges using a rasp.

If desired, dry the zest in a dehydrator. However, this method takes longer.

Use a porcelain plate for microwaving.

Stracciatella Ice Cream with Chocolate Box

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz CHOCOLATE SAUCE (page 202)

10 CHOCOLATE BOXES

30 g / 1.06 oz cocoa nibs

10 g / .35 oz cocoa powder

300 g / 10.58 oz STRACCIATELLA ICE CREAM (page 373)

ASSEMBLY

1. Spoon 10 g / .35 oz of the sauce onto the desired plate in a 5-cm / 2.5-in square stencil.
2. Place the chocolate box on the top right corner of the sauce square. Torch each side and the top of the box for 1 or 2 seconds. This will evaporate any condensation on its surface and will soften the chocolate so it is easy to cut through with a fork.
3. Place a small mound of cocoa nibs (about 3 g / .11 oz) on the bottom left corner of the sauce square.
4. Sprinkle a pinch (about 1 g / .04 oz) of cocoa powder on the plate on the left side of the box.
5. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream directly on top of the cocoa nibs and serve immediately.

Chocolate Boxes

YIELD 10 CHOCOLATE BOXES

CHOCOLATE SHELLS

500 g / 1 lb 1.64 oz tempered bitter chocolate (72%)

SMOOTH GANACHE

91 g / 3.21 oz milk

91 g / 3.21 oz heavy cream

91 g / 3.21 oz trimoline

23 g / .81 oz water

205 g / 7.23 oz dark chocolate (72%), finely chopped

MILK CHOCOLATE MOUSSE

112 g / 3.93 oz eggs

35 g / 1.23 oz sugar

166 g / 5.86 oz milk chocolate (40%)

188 g / 6.61 oz heavy cream

1. **FOR THE SHELLS:** Brush the inside of 10 rectangular plastic cubes (approximately 6.25 cm / 2.5in by 2.5 cm / 1 in by 2.5 cm / 1 in) with some of the chocolate. Make sure to get all of the corners to prevent air pockets.

2. Fill the cubes with the remaining chocolate. Tap the cubes vigorously to remove any air pockets. Let the chocolate sit for 1 minute.
3. Empty the chocolate out of the cubes, tapping any excess out, and place on a wire rack, open side facing down. It is crucial that the boxes have very thin walls so that they are easy to eat.
4. When the chocolate begins to set, scrape the "feet" off with an offset spatula. Let the chocolate set completely and extract it from the cubes by gently pulling it out with your fingers.
5. Reserve at room temperature.
6. FOR THE GANACHE: Bring the milk, cream, trimoline, and water to a boil. Pour over the chocolate. Mix with a beurre mixer until smooth, about 1 minute.
7. Pour into a piping bag. If not using right away, reserve in a closed container under refrigeration.
8. FOR THE MILK CHOCOLATE MOUSSE: Whip the eggs and sugar over a double boiler until the mixture is slightly thick and it reaches 60°C / 140°F. Do not exceed 63°C / 145°F because the eggs will start cooking. Let it cool until it reaches room temperature. Do not chill or refrigerate; it needs to be mixed with the chocolate, and if it is too cold the chocolate will set.
9. Melt the chocolate over a double boiler. Let it cool to 37°C / 100°F.
10. Whip the heavy cream to medium-stiff peaks, making sure it's not over- or under-whipped.
11. Whisk the chocolate into the egg mixture. Fold in the whipped cream in 2 additions. It will help maintain volume; if the cream is folded in all at once it won't be as light and airy.
12. Place the mousse in a piping bag and refrigerate. The mousse needs to be made right before it is needed so that it won't set. If it sets, it will be difficult to portion and it will lose volume in the process.
13. TO FINISH THE BOXES: Pipe the ganache into the shells (about one-quarter full), then pipe the mousse on top of the ganache (about half full), then ganache again (about three-quarters full), then top off with the mousse. Smooth the mousse out with a small offset spatula so it is even with the top of the box.
14. Reserve covered and refrigerated until needed. Discard any leftover boxes after 2 days, since they will get damaged by condensation.

Rice Milk Sherbet with Arroz con Leche and Cinnamon Anglaise

YIELD 10 PORTIONS

COMPONENTS

10 g / .35 oz sugar

30 ARROZ CON LECHE CUBES

300 g / 10.58 oz CINNAMON ANGLAISE

300 g / 10.58 oz RICE MILK SHERBET (page 398)

ASSEMBLY

1. Sprinkle some sugar on top of each arroz con leche cube right before serving and torch it gently so that the sugar caramelizes.
2. Place 3 cubes on the desired plate.
3. Pour 30 g / 1.06 oz of cinnamon anglaise in front of the cubes and drag the sauce with a spoon.
4. Scoop a small quenelle (20 g / .71 oz) of the sherbet on top of each rice cube and serve immediately.

Arroz con Leche (Rice with Milk) Cubes

YIELD 1 KG / 2 LB 3.27 OZ

794 g / 28 oz milk

2 cinnamon sticks

5 g / .18 oz lemon zest

88 g / 3.1 oz rice (short grain)

119 g / 4.2 oz sugar

4 gelatin sheets, bloomed

1. Line a flat sheet pan with a nonstick rubber mat. Place a .5-cm- / .25-in-deep stainless steel frame on the mat. The frame should fit just inside the pan.
2. Bring the milk, cinnamon, and lemon zest to a boil in a saucepan over medium-high heat.
3. Add the rice and stir constantly, making sure it doesn't stick to the bottom of the pot. Turn the heat down to medium. Do not let the rice boil; it should remain at a simmer.
4. Simmer the rice until it is cooked through, about 20 minutes, add the sugar and bring to a boil again.
5. Add the gelatin sheets and stir until dissolved.
6. Pour the rice into the prepared frame and cover it with a sheet of acetate to prevent any skin from forming. Allow it to set in the freezer, about 2 hours.
7. Once it has firmed up, flip the rice over so that the acetate is now on the bottom, and cut into 3.75-cm / 1.5-in squares.
8. Reserve refrigerated until needed. Discard any leftover cubes after service. The rice will become crumbly and unpleasant to eat.

Cinnamon Anglaise

YIELD 500 G / 1 LB 1.64 OZ

166 g / 5.86 oz milk

166 g / 5.86 oz heavy cream

83 g / 2.93 oz sugar

8 g / .28 oz cinnamon

78 g / 2.75 oz egg yolks

1. Combine all of the ingredients in a saucepan and cook over medium heat until the mixture reaches 80°C / 175°F, stirring constantly.
2. Pass through a fine-mesh strainer and cool over an ice bath. Reserve refrigerated until needed. All custard-based items should be discarded after 3 days.

Lemon and Buttermilk Ice Cream with Raspberry Compote

YIELD 10 PORTIONS

COMPONENTS

50 g / 1.76 oz crushed LEMON SHORTBREAD

900 g / 1 lb 15.75 oz LEMON AND BUTTERMILK ICE CREAM (page 357)

150 g / 5.29 oz RASPBERRY COMPOTE

5 g / .18 oz raspberry powder

ASSEMBLY

1. Place a small amount (about 5 g / .18 oz) of crushed cookies in the bowl.
2. Scoop a large quenelle (90 g / 3.17 oz) of the ice cream on top of the shortbread.
3. Spoon 15 g / .53 oz of raspberry compote next to the ice cream.
4. Sprinkle a thin line of raspberry powder on the quenelle, from tip to tip.
5. Serve immediately.

NOTE Use a large spoon to scoop the quenelle.

Lemon Shortbread

YIELD 1 KG / 2 LB 3.27 OZ

148 g / 5.22 oz cake flour

165 g / 5.82 oz confectioners' sugar

295 g / 10.41 oz all-purpose flour

6 g / .21 oz salt

3 g / .11 oz lemon zest

387 g / 13.65 oz butter

1. Sift all of the dry ingredients into a 12-qt mixing bowl with the lemon zest.
2. Place the butter on top of the dry ingredients; insert the paddle attachment.
3. Turn the mixer on low speed and mix until just combined. It should be a homogenous mass. It is a good idea to scrape the sides of the bowl and mix for a few more seconds to ensure an even mixture of ingredients, but be careful not to overmix.
4. Place the shortbread onto a parchment paper–lined sheet pan and shape into a square with your hands. Cover completely with plastic wrap and refrigerate for at least 2 hours.
5. Preheat a convection oven to 162°C / 325°F.
6. Using a rolling pin or a sheeter, roll out the dough to 3 mm / .13 in. Score the dough and freeze for 30 minutes.

7. Bake the shortbread as a full sheet until golden brown around the borders.
8. Once the shortbread cools, break into small pieces using a rolling pin.
9. Transfer to an airtight container. Reserve in a cool, dry place. The shortbread will keep for 3 days.

Raspberry Compote

YIELD 225 G / 7.93 OZ

100 g / 3.53 oz fresh raspberries

50 g / 1.76 oz raspberry purée

75 g / 2.64 oz superfine sugar, or as needed

1. Combine all of the ingredients gently so that the fresh raspberries don't get broken.
2. Check the sweetness and adjust with additional sugar if necessary.
3. Reserve refrigerated. Discard any leftover compote after service.

Roasted McIntosh Apple Sherbet with Candied Pecans and Caramel Syrup

YIELD 10 PORTIONS

COMPONENTS

80 g / 2.82 oz CANDIED PECANS

900 g / 1 lb 15.75 oz ROASTED MCINTOSH APPLE SHERBET (page 398)

50 g / 1.76 oz CARAMEL SYRUP

ASSEMBLY

1. Place 8 g / .28 oz of candied pecans in the base of the bowl.
2. Scoop a large quenelle (90 g / 3.17 oz) of the sherbet on top of the pecans.
3. Drizzle 5 g / .18 oz (about 1 teaspoon) of caramel syrup on top of the quenelle. Make sure to drizzle only on the quenelle, not on the bowl.
4. Serve immediately.

Candied Pecans

YIELD ABOUT 600 G / 1 LB 5.15 OZ

1 kg / 2 lb 3.27 oz sugar

10 g / .35 oz lemon juice

500 g / 1 lb 1.64 oz pecans

1. Line a full-size sheet pan with parchment paper. Place a wire cooling rack over the sheet pan and spray it with nonstick cooking spray. Place the sheet pan on a marble surface. Have 3 pairs of latex gloves available.
2. Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Add the lemon juice to prevent crystallization. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated. Begin cooking the sugar over high heat.
3. Toast the nuts until they have a toasted aroma and a light brown color. If the sugar has not caramelized by this point, keep the nuts hot until it does. If desired, keep them in the oven, but turn it off and open the oven door slightly. If cold nuts are added to the sugar, it will crystallize.
4. Continue to cook the sugar over high heat until it reaches 170°C / 338°F. Turn the heat down to low and stir in the toasted nuts. Make sure all the nuts are coated in sugar and continue to stir until you start hearing a popping sound, about 1 minute, then pour the contents of the pot over the greased wire rack.
5. Put on the 3 pairs of gloves and spray nonstick cooking spray on them. Working very quickly, separate the nuts from each other and immediately place them on the marble to cool quickly.
6. Once they have cooled, chop them coarsely.
7. Reserve in an airtight container at room temperature. They can last more than 5 days if they are kept in dry conditions.

NOTE Be careful when making this recipe in humid conditions. The nuts can easily become tacky.

Caramel Syrup

YIELD 500 G / 1 LB 1.64 OZ

413 g / 14.55 oz sugar

75 g / 2.65 oz water

13 g / .44 oz lemon juice

1. Combine all of the ingredients in a saucepan. Cook over high heat without stirring until it reaches 182°C / 360°F. Cool the mixture over an ice bath.
2. Adjust the consistency with more water if necessary. Add water if it is too thick (hard); if it is too thin, it needs to cook longer. A thick syrup consistency is ideal.
3. Reserve refrigerated to prevent crystallization. If it does not come in contact with a foreign contaminant (grease, for example, which can recrystallize the sugar) and is kept covered, it will last up to 1 month.

Brown Butter Ice Cream with Caramelized Bananas, Banana Chips, and Brown Butter

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz BROWN BUTTER

30 CARAMELIZED BANANA DISKS

300 g / 10.58 oz BROWN BUTTER ICE CREAM (page 358)

10 BANANA CHIPS

ASSEMBLY

1. Pour 30 g / 1.06 oz brown butter into a saucier and reserve warm.
2. Place 3 caramelized bananas on the plate.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the bananas.
4. Lean a banana chip on the quenelle.
5. Serve immediately. The brown butter will be poured tableside. Avoid pouring the brown butter directly on top of the ice cream because it will congeal. Spoon it into the base of the bowl.

Brown Butter

YIELD 340 G / 11.99 OZ

454 g / 1 lb butter, diced

1. Cook the butter in a saucepan over high heat until the milk proteins brown, about 10 minutes. As soon as they brown, transfer the butter to a room-temperature pan to stop the proteins from getting any darker.
2. Reserve warm during service.
3. To serve, stir the butter just before spooning onto the plate.

NOTE Always use in small amounts.

Caramelized Banana Disks

YIELD ABOUT 350 G / 12.34 OZ

250 g / 8.82 oz bananas

750 g / 1 lb 10.46 oz sugar

188 g / 6.63 oz water

13 g / .46 oz lemon juice

1. Preheat a convection oven to 93°C / 200°F. Line a sheet pan with silicone paper and spray with nonstick cooking spray.
2. Cut the bananas into 1.75-cm / .5-in disks on the bias. Do not use very ripe bananas since they will not be able to cook properly (they will fall apart as soon as they start cooking).
3. In a large sauté pan, mix the sugar, water, and lemon juice until all the sugar is moist and has a wet-sand consistency. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated.
4. Cook the sugar over high heat until it reaches a medium amber color, about 8 minutes (this time will vary depending on the type of burner used: induction will be faster than gas or electric).
5. Place the bananas in the caramel. Put the sauté pan in the convection oven and turn each banana slice over every 20 minutes. Do this a few times until the caramel has reached a dark amber color and the bananas are cooked through and appear caramelized, about 1 hour.
6. Transfer the bananas to the prepared sheet pan, using a slotted spoon so that the excess sugar drips off before putting the bananas on the sheet pan.
7. Let the bananas cool to room temperature. Reserve covered with plastic at room temperature during service. Discard leftover bananas after service.

Banana Chips

YIELD 200 G / 7.05 OZ (ABOUT 20 BANANA CHIPS)

1 kg / 2 lb 3.27 oz bananas

100 g / 3.53 oz simple syrup (65° Brix)

1. Freeze the bananas for 1 hour with the skin on, and slice as thinly as possible with an electric slicer. As they are sliced, place them on a nonstick rubber mat.
2. Preheat an oven to 75°C / 170°F.
3. Brush the bananas with simple syrup on both sides. Handle very carefully in order not to break the delicate slices. Once they have been brushed on both sides, remove the peel. The peel helps move the slices with little damage to the banana.
4. Place the nonstick rubber mat on a sheet pan.
5. Bake until the banana slices are firm, about 2 hours. Remove them from the rubber mat while they are hot and let them cool on a marble surface. If they cool on the rubber mat, it will be nearly impossible to remove them without breaking them.
6. Reserve in an airtight container at room temperature. If they are kept in a very dry environment, they can last for up to 1 week.

NOTES Be careful when making banana chips in a hot and/or humid environment. They will get tacky and soft.

There will be a lot of waste. Save the trimmings for other uses, such as ice cream or sorbet.

White Truffle Ice Cream with Truffled Tapioca and Shaved Black Truffles

YIELD 10 PORTIONS

COMPONENTS

900 g / 1 lb 15.75 oz TRUFFLED TAPIOCA

900 g / 1 lb 15.75 oz WHITE TRUFFLE ICE CREAM (page 358)

100 g / 3.53 oz black truffle powder

10 g / .35 oz shaved black truffles

ASSEMBLY

1. Spoon 90 g / 3.17 oz of truffled tapioca in the center of a bowl.
2. Scoop a large quenelle (90 g / 3.17 oz) of the ice cream on top of the tapioca.
3. Sprinkle 10 g / .35 oz of black truffle powder on top of the ice cream.
4. Serve immediately. The black truffles should be shaved tableside directly on top of the ice cream; 1 g / .03 oz per serving is sufficient.

NOTE This is a very specific flavor that some consider to be an acquired taste, and many people who do like truffles may not be used to them served in a dessert. It is because of this that the ice cream was intentionally created to be less sweet.

Truffled Tapioca

YIELD APPROXIMATELY 650 G / 1 LB 6.93 OZ

TRUFFLED HEAVY CREAM

414 g / 14.6 oz heavy cream

87 g / 3.07 oz Alba white truffles (trimmings)

10 g / .35 oz sugar, or as needed

5 g / .18 oz salt, or as needed

TAPIOCA

250 g / 8.82 oz small pearl tapioca

Approximately 3 kg / 6 lb 9.8 oz water, or as needed

Approximately 200 g 7.05 oz Truffled Heavy Cream, or as needed

1. FOR THE TRUFFLED CREAM: Heat the cream gently and steep white truffle trimmings in it.
2. Season with sugar and salt to taste (not too sweet, not too salty). Strain through a fine-mesh strainer. Reserve under refrigeration until needed.

3. **FOR THE TAPIOCA:** Soak the tapioca overnight in enough water so that the volume doubles. Drain the excess water. In a pot, combine the tapioca with enough water to cover it. Bring the tapioca to a simmer. Cover and simmer the tapioca 2 more times. Rinse in cold water, then soak in cold water for 5 minutes. Rinse and soak again. Drain.
4. Adjust the consistency of the tapioca with the truffled heavy cream so that the tapioca is a spoonable consistency and the tapioca balls aren't stuck to each other. Store in the refrigerator until ready to use. Do not keep longer than 24 hours, as it becomes crumbly. "Chewy" is the ideal consistency. Once it has turned crumbly, it must be discarded.

NOTES Alba truffles are from Northern Italy. This truffled cream formula will not yield 500 g / 1 lb 1.64 oz of final product. The white truffles will not be included in the total weight amount because they will be discarded. Also, remember that the truffles will absorb some of the heavy cream, so be sure to increase the recipe so that the heavy cream amount is more than the total weight that is needed.

Even though the recipe calls for 250 g / 8.82 oz of small pearl tapioca, it will yield much more because of the absorption of water. When adjusting the consistency, be sure not to add too much liquid so that only some excess liquid is visible.

Frozen Praline Parfait with Hazelnut-Mascarpone Gâteau

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz PRALINE PARFAIT (page 404)

300 g / 10.58 oz CHOCOLATE SHELL, melted

50 g / 1.76 oz chopped toasted hazelnuts

10 slices HAZELNUT-MASCARPONE GÂTEAU

5 g / .18 oz Maldon sea salt

ASSEMBLY

1. Transfer to a piping bag and portion into a 2.5-cm / 1-in diameter demi-sphere fleximold mat, smoothing out the top with an offset spatula. The molds should have at least 20 demi-spheres. Place in the freezer to harden.
2. Once hardened, fuse 2 sorbet demi-spheres together by rubbing the edges where they touch with your gloved hands. Return to the freezer.
3. Once hardened, insert a toothpick into each sphere. Dip each sphere separately into the melted chocolate shell. Keep inverted until all the excess chocolate has dripped off.
4. Insert the toothpick into a Styrofoam base to hold the spheres up while the chocolate sets.
5. Before the chocolate shell sets, sprinkle a small pinch of toasted hazelnuts on the chocolate.
6. Once the chocolate has set, remove the toothpick from the spheres and reserve them frozen, with the hazelnuts facing up.
7. Place a slice of the cake on the desired plate.
8. Sprinkle a pinch of Maldon sea salt on top of the cake.
9. Place a sphere next to the cake, with the hazelnuts facing up.
10. Temper the entire dessert for 4 to 5 minutes before serving.

NOTE This dessert intentionally has no sauce. There are enough smooth and sweet components that a sauce is redundant.

Chocolate Shell

YIELD 500 G / 1 LB 1.64 OZ

350 g / 12.35 oz dark chocolate (64%)

150 g / 5.29 oz hazelnut oil

1. Melt the chocolate with the hazelnut oil over a hot water bath, stirring occasionally.
2. Cool the mixture to room temperature or reserve it hot enough that it will remain liquid. The top of a hot oven is ideal for keeping the chocolate shell liquid and not too hot.
3. If it will be kept hot, it can last for up to 1 month. If it is kept solid at room temperature, it can last for up to 6 months, until the hazelnut oil goes stale.

NOTE If desired, substitute another oil, such as walnut, for the hazelnut oil. Cocoa butter may also be substituted, but the shell will have a firmer consistency.

Hazelnut-Mascarpone Gâteau

YIELD ONE CAKE 40 CM / 15.75 IN BY 60 CM / 23.62 IN BY 2.5 CM / 1 IN

PRALINE

1 kg / 2 lb 3.27 oz sugar

250 g / 8.81 oz water

20 g / .71 oz lemon juice

500 g / 1 lb 1.64 oz almonds

500 g / 1 lb 1.64 oz hazelnuts

PRALINE CRUST

371 g / 13.08 oz praline paste

370 g / 13.05 oz almond paste

185 g / 6.53 oz milk chocolate (40%), melted and cooled to 40°C / 104°F

74 g / 2.61 oz butter, melted and cooled to 40°C / 104°F

FRANGIPANE

400 g / 14.11 oz almond paste (50% nuts)

400 g / 14.11 oz sugar

400 g / 14.11 oz butter, at room temperature

135 g / 4.76 oz eggs, at room temperature

110 g / 3.88 oz cake flour

TO SOAK THE CAKE

75 g / 2.64 oz simple syrup (50° Brix)

5 g / .18 oz pure almond extract

PRALINE MASCARPONE CREAM

1.96 kg / 4 lb 5.14 oz mascarpone, soft

435 g / 15.34 oz praline paste (commercial smooth praline paste, 50% nuts)

435 g / 15.34 oz superfine sugar (or other small crystal sugar)

21 g / .74 oz gelatin sheets, bloomed

CARAMEL GLAZE

14 g / .49 oz salt

62 g / 2.19 oz water

43 g / 1.52 oz cornstarch

740 g / 1 lb 10.1 oz sugar

620 g / 1 lb 5.87 oz heavy cream

21 g / .74 oz gelatin sheets

1. **FOR THE PRALINE:** In a saucepan, combine the sugar with the water to make a wet-sand consistency. Add the lemon juice to prevent crystallization. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated. Cook the sugar over high heat until it reaches 182°C / 360°F.
2. Meanwhile, toast the nuts in a 160°C / 325°F oven until they begin to have a toasted aroma and a light brown color.
3. When the sugar has reached the required temperature, stir in the nuts while they are still hot (otherwise the sugar will crystallize).
4. Turn the heat off and continue to stir until you hear a popping sound.
5. Pour the praline onto a sheet pan lined with parchment paper.
6. Once it has cooled, break it up into small pieces (approximately 2.5 cm / 1 in each) and grind in a robot coupe until sandy in texture (do not grind to a paste).
7. Reserve in an airtight container. It can keep for up to 2 weeks.
8. **FOR THE PRALINE CRUST:** Combine the praline and almond paste in the bowl of an electric mixer fitted with the paddle attachment. Mix on medium speed until uniformly combined, about 3 minutes.
9. Pour in the chocolate and then the butter. It is crucial that they not be hotter than indicated, otherwise the ingredients (especially the fat) will separate.
10. Shape into a square, wrap, and refrigerate.
11. Once cold and firm, roll out 3 mm / .11 in thick in a rectangle 40 cm / 15.75 in by 60 cm / 23.62 in. Transfer to a sheet pan that is as flat as possible.
12. Place a 40 cm / 15.75 in by 60 cm / 23.62 in by 2.5-cm / 1-in Plexiglas frame over the crust. Trim the crust around the inside of the frame so that the crust is inside the frame and the frame is not laying on the crust. The frame should fit inside the sheet pan.
13. Refrigerate until needed.
14. **FOR THE FRANGIPANE:** Line a sheet pan with a nonstick rubber mat. Place a 40 cm / 15.75 in by 60 cm / 23.62 in by .5-cm / .19-in Plexiglas frame on top of the mat.
15. Preheat an oven to 160°C / 325°F.
16. Mix the almond paste and sugar with a paddle on medium speed until sandy, about 5 minutes. Add the butter and beat on medium speed until the butter has softened and incorporated with the other ingredients, about 5 minutes.
17. Slowly incorporate the eggs in 4 additions. Scrape the sides of the bowl after every addition.
18. Add the flour and mix until just incorporated.
19. Pour the batter onto the prepared sheet pan. Spread the batter evenly inside the Plexiglas frame using an offset spatula, smoothing it out to the top of the frame so that it is an even rectangle. Remove the frame from the sheet pan.
20. Bake until slightly golden brown around the border, about 8 minutes.
21. Once cooled, trim the borders so it will fit inside the 2.5-cm / 1-in frame, on top of the praline crust.
22. Combine the simple syrup and almond extract. Soak the frangipane with the mixture using a pastry brush. Set aside.
23. **FOR THE PRALINE MASCARPONE CREAM:** Combine the mascarpone with the praline paste and the sugar. Mix over a hot water bath until the sugar is dissolved and all of the ingredients are evenly incorporated and a liquid consistency. Stir in the gelatin and mix until it has dissolved. It is important to use a good-quality mascarpone because more economical ones tend to break when they get hot.

24. Pour the mixture into the 2.5-cm / 1-in frame lined with the frangipane and praline crust. Remove any excess from the top so that it is even with the top of the frame. Let it set completely in the refrigerator before glazing.
25. **FOR THE CARAMEL GLAZE:** Combine the salt, water, and cornstarch. Mix until the cornstarch and sugar dissolve to make a slurry.
26. Make a dark caramel with the sugar and heavy cream. Combine the sugar with the equivalent of one-quarter of its weight in water and bring to a boil. While it cooks, bring the heavy cream to a simmer and reserve hot. Cook the sugar until it reaches 170°C / 338°F, or until it has a dark amber color. Turn the heat off and slowly stir in the hot heavy cream in increments, using a long whisk. Once all of the heavy cream has been incorporated, turn the heat up to high.
27. Stir in the slurry and return to a boil to cook the cornstarch and thicken the caramel. When the first bubble appears, it is ready to come off the heat (the bubble means that the starch is cooked through).
28. Remove from the heat and stir in the gelatin sheets.
29. Pass the glaze through a fine-mesh strainer and cool over an ice bath.
30. Refrigerate until needed.
31. To glaze the cake, melt the glaze over a hot water bath. If necessary, cool the glaze to 19°C / 66°F, pour it over the entire surface of the cake and spread evenly with an offset spatula.
32. Tap the sheet pan gently to even out the glaze. If there are bubbles on the surface, torch them and they will pop.
33. Refrigerate and let the glaze set.
34. Score the desired measurements on the cake (in this case, 1.5 cm / .6 in by 5 cm / 2 in slices), trimming a horizontal border and a vertical border first. Begin measuring at the trimmed borders.
35. To cut the cake, dip a slicing knife or any other thin knife in very hot water, dry it with a paper towel, then cut, repeating this with every cut in order to get a clean cut. Make sure the knife is at a perfect 90-degree angle to cut straight down. Bring the knife down, then pull toward you to get the cleanest cut.
36. Reserve refrigerated until needed. Do not cover, because this will cause condensation on the glaze. The cake will last for 2 days.

NOTE The amount of caramel glaze is sufficient for 1 full sheet pan cake.

Apricot Sorbet with Vanilla Sablée, Candied Sicilian Pistachios, Apricot Paper, and Pistachio Dust

YIELD 10 PORTIONS

COMPONENTS

10 VANILLA SABLÉE RECTANGLES

900 g / 1 lb 15.75 oz APRICOT SORBET (page 388)

100 g / 3.53 oz CANDIED SICILIAN PISTACHIOS

10 sheets APRICOT PAPER

10 g / .53 oz PISTACHIO DUST

ASSEMBLY

1. Place a sablée rectangle on the plate.
2. Scoop a large quenelle (90 g / 3.17 oz) of the sorbet on top of the sablée.
3. Sprinkle about 10 g / .53 oz of candied pistachios on the sorbet.
4. Lean 1 sheet of apricot paper on the quenelle.
5. Sprinkle about 1 g / .04 oz pistachio powder on the plate and serve immediately.

Vanilla Sablée Rectangles

YIELD 750 G / 1 LB 10.46 OZ

52 g / 1.83 oz bread flour

52 g / 1.83 oz pastry flour

250 g / 8.82 oz cake flour

171 g / 6.03 oz butter, soft

3 g / .11 oz salt

128 g / 4.5 oz confectioners' sugar

1.5 Tahitian vanilla pods, split and scraped

25 g / .88 oz almond flour

71 g / 2.5 oz eggs, at room temperature

1. Sift the bread, pastry, and cake flours.
2. Cream the butter, salt, sugar, vanilla beans, and almond flour using a paddle until evenly mixed, about 3 minutes. Do not overmix or incorporate air.
3. Add the eggs in 4 stages, scraping the bowl after each addition.
4. Add the sifted flours in 4 stages on the lowest speed, scraping the sides and the bottom of the bowl after each addition.
5. Shape the dough into a flat rectangle. Wrap in plastic wrap and refrigerate for 1 to 2 hours, or until firm.

6. Preheat an oven to 160°C / 325°F.
7. Roll the dough to 3 mm / .11 in thick and refrigerate.
8. Cut the dough into rectangles 2.5 cm / 1 in by 5 cm / 2 in and refrigerate again.
9. Score the dough with a fork. Bake until golden brown on the dough's border, about 6 minutes.
10. Cool to room temperature.
11. Reserve in an airtight container at room temperature. Discard any leftover sablée after 2 days.

Candied Sicilian Pistachios

YIELD ABOUT 650 G / 1 LB 6.93 OZ

1.5 kg / 3 lb 4.91 oz sugar

15 g / .53 oz lemon juice

500 g / 1 lb 1.64 oz Sicilian pistachios

1. Line a full-size sheet pan with parchment paper. Place a wire cooling rack over the sheet pan and spray it with nonstick cooking spray. Place the sheet pan near a marble surface. Have 3 pairs of latex gloves available.
2. Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Add the lemon juice to prevent crystallization. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated.
3. Toast the nuts until they have a toasted aroma and a light brown color. If the sugar has not caramelized by this point, keep the nuts hot until it does. If desired, keep them in the oven, but turn it off and open the oven door slightly. If cold nuts are added to the sugar, it will crystallize.
4. Cook the sugar over high heat until it reaches 170°C / 338°F. Turn the heat down to low and stir in the toasted nuts. Make sure all the nuts are coated in sugar and continue to stir until you start hearing a popping sound, then pour the contents of the pot over the greased wire rack.
5. Put on the 3 pairs of gloves and spray nonstick cooking spray on them. Working very quickly, separate the nuts from each other and immediately place them on the marble to cool quickly.
6. Once they have cooled, reserve them in an airtight container at room temperature. If kept in dry conditions, they can last for up to 5 days.

NOTE Be careful when making this recipe in humid conditions. The nuts can become tacky and soft.

Apricot Paper

YIELD 325 G / 11.46 OZ

500 g / 1 lb 1.64 oz apricot purée

150 g / 5.29 oz sugar, as needed

1. Preheat an oven to 80°C / 180°F.
2. Combine the apricot purée with sugar, as needed.
3. Line a sheet pan with a nonstick rubber mat. Pour some apricot purée on the rubber mat; spread it thinly with an offset spatula.
4. Bake until the purée can be peeled off the rubber mat, about 20 minutes. Tear or cut out rectangles about twice the size of the sablee. It is nearly impossible to get perfect rectangles, but try to get them as even as possible. Let cool to room temperature.
5. Store the apricot paper pieces in an airtight container at room temperature with silica gel packs to absorb moisture. If kept in dry conditions, they can last for up to 3 days.

NOTE Be careful when making this recipe in hot and/or humid conditions.

Pistachio Dust

YIELD 110 G / 3.88 OZ

100 g / 3.53 oz Sicilian pistachios, toasted and cooled

10 g / .35 oz bread flour

Grind the pistachios with the bread flour in a spice grinder to help prevent them from clumping. Store at room temperature in an airtight container. If kept under dry conditions, they can last for up to 1 week before going stale.

Litchi Sorbet Wrapped in Caramelized Mango

YIELD 10 PORTIONS

COMPONENTS

60 MANGO-WRAPPED LITCHI SORBET BÂTONS

100 g / 3.53 oz sugar

ASSEMBLY

1. Remove the bâtons from the freezer. Coat them (on top only) with sugar and caramelize them using a torch.
2. Place 6 bâtons on a plate in a straight line.
3. Let them sit at room temperature for 2 to 3 minutes before serving.

Mango-Wrapped Litchi Sorbet Bâtons

YIELD 60

6.5 kg / 14 lb 5.28 oz ripe mangoes

1 kg / 2 lb 3.27 oz simple syrup (50° Brix)

1 kg / 2 lb 3.27 oz Litchi Sorbet base (page 394)

1. Peel and seed the mangoes. Slice them into 3-mm- / .13-in-thick slices with an electric slicer or a mandoline, and place the slices gently in a hotel pan.
2. Bring the simple syrup to a boil and pour over the sliced mangoes. Reserve refrigerated.
3. Line 25 PVC pipes 19 cm / 7.5 in by .5 in diameter with acetate sheets, and place on a sheet pan in the freezer.
4. Churn the sorbet and pipe into the lined PVC. Freeze until hardened.
5. Lay approximately 20 to 25 of the mango slices onto each of 25 sheets of acetate 19 cm / 7.5 in by 10 cm / 4 in, overlapping them slightly. Cover with parchment paper and reserve refrigerated.
6. Remove the sorbet from the cylinder and remove the acetate. Place on top of the sliced mangoes. Using the acetate as a guide, roll the sliced mangoes over the sorbet to form a cylinder. Freeze to harden. Repeat this with all the sorbet and mango slices until all 25 tubes are done.
7. Cut into 5-cm / 2-in-long pieces. Reserve wrapped in an airtight container in the freezer until needed. Discard after 2 days.

Granny Smith Apple and Fennel Sorbet with Fennel Jam, Kataifi Bundles, and Sugared Fennel Fronds

YIELD 10 PORTIONS

COMPONENTS

600 g / 1 lb 5.16 oz GRANNY SMITH APPLE AND FENNEL SORBET BASE (page 381)

300 g / 10.58 oz FENNEL JAM

300 g / 10.58 oz KATAIFI BUNDLES

10 SUGARED FENNEL FRONDS

ASSEMBLY

1. Line 10 PVC tubes 7.5 cm / 3 in by 2.5 cm / 1 in diameter with acetate.
2. Line a half sheet pan with acetate or a nonstick rubber mat; place the tubes on the sheet pan in a standing position and freeze.
3. Churn or pacotize the sorbet. Pour into a piping bag and pipe into the prepared tubes. Even out the top with an offset spatula.
4. Place in the freezer to harden and reserve until needed.
5. Place a baked kataifi bundle in the center of the plate.
6. Spoon 30 g / 1.06 oz of fennel jam on one end of the kataifi.
7. Remove the sorbet from the tube and cut it in half diagonally. Place 1 piece of sorbet on the kataifi, then place the other piece of sorbet on top of the previous piece.
8. Place a sugared fennel frond on top of the sorbet and serve immediately.

Fennel Jam

YIELD 500 G / 1 LB 1.64 OZ

249 g / 8.78 oz fennel bulb, coarsely diced

249 g / 8.78 oz sugar

2 g / .07 oz tartaric acid

1. Combine the fennel, sugar, and tartaric acid in a saucepan.
2. Cook the mixture over high heat. Once the mixture reaches 68° Brix and 129°C / 264°F, after about 20 minutes, remove the pan from the heat and immediately cool it over an ice bath.
3. Reserve at room temperature during service; otherwise, refrigerate. It can last for up to 4 days, but be careful because it crystallizes easily.

Kataifi Bundles

YIELD ABOUT 17 BUNDLES

100 g / 3.53 oz clarified butter, as needed

500 g / 1 lb 1.64 oz kataifi

100 g / 3.53 oz sugar, as needed

1. Preheat a convection oven to 160°C / 325°F. Turn the fan off or to the lowest setting. Otherwise the kataifi will blow around the oven because it is so light.
2. Melt the clarified butter and let cool to room temperature.
3. Gently douse the kataifi with the clarified butter. Hang it so that the excess butter drips off.
4. Toss the kataifi in the sugar and shake the excess off. Break it up into 30-g / 1.06-oz pieces.
5. Line a sheet pan with a nonstick rubber mat. Place the kataifi over the sheet pan. Fluff it to give it as much height as possible.
6. Bake until golden brown, about 8 minutes.
7. Reserve in an airtight container at room temperature. Discard leftover bundles after 2 days.

Sugared Fennel Fronds

YIELD ABOUT 20 SUGARED FENNEL FRONDS

50 g / 1.76 oz fennel fronds

10 g / .35 oz pasteurized egg whites

200 g / 7.05 oz bakers' sugar

1. Using a smooth artist's brush, brush both sides of the fronds with a thin layer of egg whites, then gently toss them in the sugar. Pick the fronds up by the stems and let them dry on a sheet pan lined with parchment paper at room temperature for at least 4 hours before using.
2. Reserve in an airtight container at room temperature. Discard leftover fronds after 3 days.

Black and Tan Ice Cream with Espresso Génoise and Milk Chocolate Clouds

YIELD 10 PORTIONS

COMPONENTS

50 g / 1.76 oz ESPRESSO SYRUP

10 ESPRESSO GÉNOISE RECTANGLES

10 MILK CHOCOLATE CLOUDS

300 g / 10.58 oz BLACK AND TAN ICE CREAM (page 359)

ASSEMBLY

1. Brush about 5 g / .18 oz espresso syrup on the plate in a cross pattern.
2. Place an espresso génoise on the plate on top of the espresso syrup.
3. Stand the chocolate cloud next to the génoise.
4. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the génoise and serve immediately.

Espresso Syrup

YIELD 250 G / 8.81 OZ

200 g / 7.05 oz concentrated espresso

50 g / 1.76 oz simple syrup (50° Brix)

Stir together the espresso and simple syrup and reserve under refrigeration.

NOTE For the concentrated espresso, use 3 times the amount of espresso beans than would be used for regular espresso, about 90 g / 3.17 oz espresso beans to 300 g / 10.58 oz water.

Espresso Génoise

YIELD 1 KG / 2 LB 3.27 OZ

428 g / 15.1 oz eggs

240 g / 8.47 oz dark brown sugar

3 g / .11 oz salt

120 g / 4.23 oz bread flour

120 g / 4.23 oz pastry flour

50 g / 1.76 oz powdered coffee, water soluble

41 g / 1.45 oz butter, melted but cool

1. Combine the eggs, sugar, and salt in a 20-qt mixer bowl. Place over a hot water bath and bring the contents of the bowl up to 48°C / 120°F while whisking slowly (don't whisk too vigorously or else too much air will be incorporated and it will take too long for the ingredients to warm up). The point of this step is to dissolve the sugar and salt and to warm up the eggs so they will whip quickly.
2. Transfer the bowl to a mixer and whip on high speed for 5 minutes, then turn the speed down to medium and whip for 15 more minutes.
3. Meanwhile, preheat a convection oven to 176°C / 350°F, open the vents, and turn the fan speed down to low.
4. Grease a full-size sheet pan and line it with parchment paper or a nonstick rubber mat. If using the mat, grease only the border of the pan.
5. Sift the bread flour, pastry flour, and coffee powder together twice.
6. After the eggs have whipped to full volume, take the bowl off the mixer and gently fold in the dry ingredients.
7. Fold in the butter carefully so as not to deflate the génoise.
8. Immediately after, pour the batter into the prepared sheet pan and spread out evenly with an offset spatula. Bake until golden brown and the sponge springs back when gentle pressure is applied, about 12 minutes.
9. Cool to room temperature.
10. Freeze the génoise for 2 hours and then cut into rectangles 2.5 cm / 1 in by 7.5 cm / 3 in.
11. Reserve in an airtight container at room temperature. Discard any leftover génoise after service.

Milk Chocolate Clouds

YIELD 600 G / 1 LB 5.16 OZ (ABOUT 25 PIECES)

500 g / 1 lb 1.63 oz melted milk chocolate

100 g / 3.53 oz canola oil

1. Line a flat half sheet pan with an acetate sheet.
2. Melt the milk chocolate with the canola oil over a hot water bath.
3. Pour the chocolate into a 1-L /1.04-qt siphon canister and screw on the lid tightly.
4. Charge with 4 cartridges of gas. Shake vigorously for 1 minute after each charge.
5. Pour the contents onto the prepared sheet pan. Let the chocolate set in the refrigerator for 20 minutes.
6. Break apart into the desired size.
7. Reserve in an airtight container in a cool, dry place. If properly stored, they can last for up to one year.

Bitter Chocolate Sorbet and Ganache Napoleon

YIELD 10 PORTIONS

COMPONENTS

40 g / 1.41 oz BITTER CHOCOLATE SAUCE (page 202; use 72% bitter chocolate)

20 BITTER GANACHE SQUARES

40 BITTER CHOCOLATE RECTANGLES

20 BITTER CHOCOLATE SORBET SQUARES

ASSEMBLY

1. Spoon 4 g / .14 oz of the chocolate sauce on the plate.
2. Place a square of ganache on the center of the plate. Place a chocolate rectangle off center on top of the ganache, so there is about a 2.5-cm / 1-in overhang. Place a sorbet square on top of the chocolate rectangle, lined up with the ganache, then another chocolate rectangle on top of the sorbet, lined up with the first chocolate rectangle. Repeat the layers with the remaining components (ganache square, chocolate rectangle, sorbet square, chocolate rectangle). The top and final layer should be a chocolate rectangle.
3. Temper for 2 or 3 minutes and serve immediately.

Bitter Ganache Squares

YIELD 1 KG / 2 LB 3.27 OZ

476 g / 16.79 oz heavy cream

429 g / 15.13 oz dark chocolate (64%), finely chopped

95 g / 3.35 oz butter, soft

1. Bring the heavy cream to a boil and pour over the chocolate. Let the mixture sit without stirring for 1 minute. Stir with a rubber spatula until the chocolate has melted. Mix in the butter and stir until it has melted. Cover and allow to firm for 45 minutes at room temperature.
2. Meanwhile, line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by .5 cm / .25 in Plexiglas frame inside the sheet pan. Place the sheet pan in the freezer.
3. Pour the ganache into the prepared frozen frame and spread out evenly using an offset spatula. Harden under refrigeration.
4. Line a half sheet pan with a nonstick rubber mat and refrigerate.
5. Once the ganache has hardened, flip the ganache onto another nonstick rubber mat before cutting it. Place it back on the cold sheet pan and peel off the top rubber mat. This will make the process easier, since the ganache won't stick to the new rubber mat as much. Using a 5-cm / 2-in square cutter, cut the ganache out, dipping the square cutter in warm (not hot) water each time to get a clean cut.
6. Once the ganache is cut, lift each square using a small offset spatula and transfer to the second chilled sheet pan lined with a nonstick rubber mat. If the uncut ganache starts getting too soft, return it to refrigeration. Cut it once it firms up again.
7. Transfer to an airtight container and reserve at room temperature. Discard any leftover ganache after 5 days.

Bitter Chocolate Rectangles

YIELD 200 G / 7.05 OZ (45 TO 50 PIECES)

200 g / 7.05 oz tempered bitter chocolate (72%)

1. Place a sheet of acetate on a marble surface.
2. Pour the chocolate on the acetate sheet and spread it into a very thin layer using an offset spatula. Make sure it is thin. Thick chocolate garnishes aren't easy to cut through, and they don't look very good.
3. Lift the acetate and move it elsewhere on the marble so that the acetate won't stick to the marble from the excess at the edges.
4. When the chocolate is almost set, use a ruler to cut rectangles 5 cm / 2 in by 7.5 cm / 3 in using the back of a paring knife (using the blade side will cut through the acetate, making it difficult to handle the chocolate rectangles). Transfer the acetate to a flat sheet pan lined with parchment paper, chocolate side facing down. Place another sheet pan or a few nonstick rubber mats on top of the acetate to weigh down the chocolate so that the rectangles don't bow too much once they have set. Leave them as they are until needed (the acetate will protect them from getting scuffed). When ready to plate, simply peel the acetate away from the chocolate.
5. Reserve in a cool place at a temperature that does not exceed 21°C / 70°F.

Bitter Chocolate Sorbet Squares

YIELD 750 G / 1 LB 10.46 OZ

750 g / 1 lb 10.46 oz Bitter Chocolate Sorbet base (page 394)

1. Line a half sheet pan with a nonstick rubber mat. Place a Plexiglas frame 25 cm / 10 in by 38 cm / 15 in by .5 cm / .25 in inside the sheet pan. Place the sheet pan in the freezer.
2. Churn or pacotize the sorbet. Transfer the sorbet to the prepared frozen frame and spread out evenly using an offset spatula. Place in the freezer to harden.
3. Line a half sheet pan with a nonstick rubber mat and freeze.
4. Once the sorbet has hardened, flip it onto another nonstick rubber mat before cutting it. Place it back on the frozen sheet pan and peel off the top rubber mat. Using a 5-cm / 2-in square cutter, cut out the sorbet squares, dipping the square cutter in warm (not hot) water each time to get a clean cut.
5. Once the sorbet is cut, lift each square using a small offset spatula and transfer to the second prepared frozen sheet pan. If the uncut sorbet starts getting too soft, return it to the freezer. The sorbet is directly exposed to the freezer ventilation, and this might cause excessive hardening and ice crystal formation, so don't let it sit in this condition for too long.
6. Wrap it after 20 minutes or transfer to an airtight container, which will make service much easier. Reserve frozen until needed.

Milk Chocolate Parfait Napoleons

YIELD 10 PORTIONS

COMPONENTS

120 g / 4.23 oz SALTED CARAMEL SAUCE

10 PETIT BEURRE COOKIES

10 FROZEN MILK CHOCOLATE PARFAIT SQUARES

10 MILK CHOCOLATE SQUARE PLAQUES

5 g / .18 oz gray sea salt

ASSEMBLY

1. Place a dime-size amount of caramel sauce on the plate (about 2 g / .07 oz).
2. Place a cookie on top of the caramel.
3. Place a parfait square on top of the cookie, making sure they are both flush with each other.
4. Place a chocolate plaque on top of the parfait. It is intentionally slightly larger than the other 2 components.
5. Spoon 10 g / .35 oz of salted caramel sauce directly across the top of the chocolate plaque.
6. Sprinkle a few grains of gray sea salt on top of the caramel.
7. Let the parfait temper for 3 or 4 minutes before serving.

Salted Caramel Sauce

YIELD 500 G / 1 LB 1.64 OZ

270 g / 9.52 oz sugar

140 g / 4.94 oz heavy cream

90 g / 3.17 oz salted butter, diced

1. Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated. Bring to a boil over high heat.
2. While the sugar cooks, bring the heavy cream to a simmer.
3. Cook the sugar to 170°C / 338°F or until it has a dark amber color. Turn the heat off and slowly stir in the hot cream in increments, using a long whisk. Once all of the cream has been incorporated, turn the heat up to high. Stir in the butter and turn off the heat.
5. Pour the caramel into an adequately sized container and let the contents cool to room temperature.
6. Reserve at room temperature during service (if refrigerated, it will get too hard to portion). It can last for up to 1 month if it is kept covered and in a cool area.

Petit Beurre Cookies

YIELD 1.06 KG / 2 LB 5.38 OZ (WITH THE SUGAR FOR SPRINKLING)

351 g / 12.36 oz salted butter, soft

175 g / 6.17 oz sugar

59 g / 2.06 oz rice flour

409 g / 14.43 oz all-purpose flour

7 g / .25 oz salt

50 g / 1.76 oz sugar for sprinkling, or as needed

1. Cream the butter and sugar together on medium speed until smooth, about 5 minutes.
2. Sift together the flours and salt. Add to the butter and mix on slow speed until incorporated.
3. Roll the dough out to 5 mm / .2 in thick and refrigerate until hardened, about 1 hour.
4. Preheat a convection oven to 160°C / 325°F.
5. Cut the shortbread into 6.25-cm / 2.3-in squares.
6. Sprinkle sugar on top and score with a fork. Freeze for 20 minutes.
7. Bake until golden brown on the borders, about 5 minutes. Cut the cookies again with the same cutter while they are still warm in order to get a clean cut and uniform square shape.
8. Cool to room temperature.
9. Reserve in an airtight container in a cool dry place. Discard after 2 days.

Frozen Milk Chocolate Parfait Squares

YIELD 1 KG / 2 LB 3.27 OZ

1 kg / 2 lb 3.27 oz Milk Chocolate Parfait base (page 404)

1. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 5-cm / 2-in Plexiglas frame inside the sheet pan. Place the sheet pan in the freezer.
2. Transfer the parfait base to the prepared frozen frame and spread out evenly using an offset spatula. Place in the freezer to harden.
3. Line a half sheet pan with a nonstick rubber mat and freeze.
4. Once the parfait has hardened, flip the parfait onto another nonstick rubber mat. Place it back on the frozen sheet pan and peel off the top rubber mat. Using a 6.25-cm / 2.5-in cutter, cut the parfait out, dipping the square cutter in warm (not hot) water each time to get a clean cut.
5. Once the parfait is cut, lift each piece using a small offset spatula and transfer to the second prepared frozen sheet pan. If the uncut parfait starts getting too soft, return it to the freezer. The parfait is directly exposed to the freezer ventilation, and this might cause excessive hardening and ice crystal formation, so don't let it sit in this condition for too long.
6. Once the squares have hardened, transfer to an airtight container. Reserve frozen until needed. Discard after 3 days.

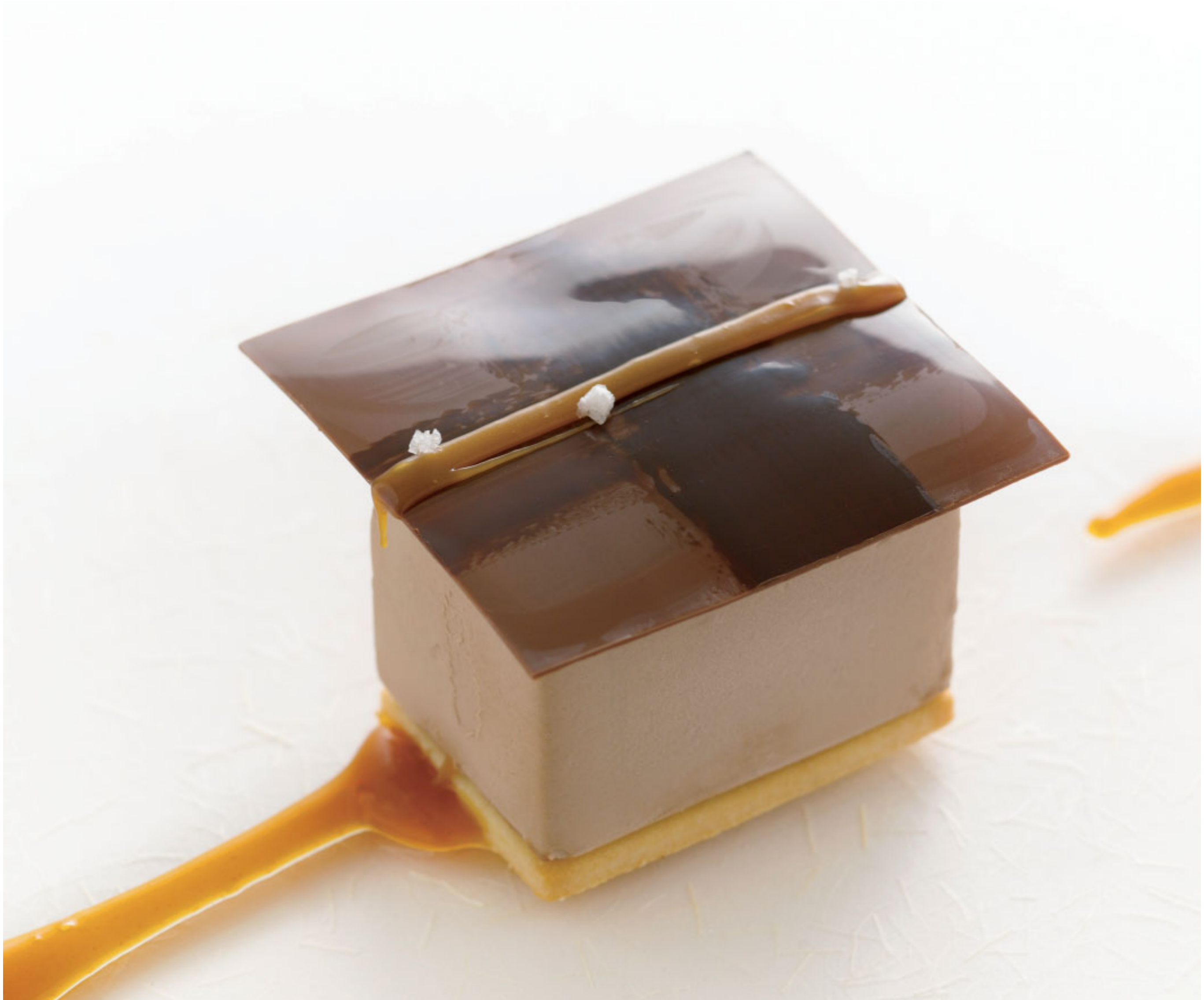
Milk Chocolate Square Plaques

YIELD 250 G / 8.82 OZ (ABOUT 40 PLAQUES)

50 g / 1.76 oz tempered dark chocolate (64%)

200 g / 7.05 oz tempered milk chocolate (40%)

1. Place a sheet of acetate on a marble surface.
2. Brush the dark chocolate on the acetate sheet in a grid pattern.
3. Pour the milk chocolate on the acetate sheet and spread it into a very thin layer using an offset spatula. Make sure it is thin. Thick chocolate garnishes aren't easy to cut through, and they don't look very good.
4. Lift the acetate and move it elsewhere on the marble so that the acetate won't stick to the marble from the excess on the borders.
5. When the chocolate is almost set, use a ruler to cut 6.75-cm / 2.75-in squares using the back of a paring knife (using the blade side will cut through the acetate, making it difficult to handle the chocolate squares). Transfer the acetate to a flat sheet pan lined with parchment paper, chocolate side facing down. Place another sheet pan or a few nonstick rubber mats on top of the chocolate to weigh it down so that the squares don't bow too much once they have set.
6. Reserve in a cool dry place at room temperature as they are (the acetate will protect them from getting scuffed).



Vanilla and Strawberry Jam Ice Cream with Macerated Strawberry Gelée

YIELD 10 PORTIONS

COMPONENTS

10 cubes MACERATED STRAWBERRY GELÉE

10 ALMOND LACE TUILES

100 g / 3.53 oz STRAWBERRY SAUCE

300 g / 10.58 oz VANILLA AND STRAWBERRY JAM ICE CREAM (page 372)

ASSEMBLY

1. Place a cube of strawberry gelée on the plate. Torch it for 1 to 2 seconds to give the cube a cleaner, shinier look.
2. Place an almond tuile on top of the cube.
3. Pour 10 g / .35 oz of the strawberry sauce around one half of the gelée cube.
4. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the almond tuile and serve immediately.

Macerated Strawberry Gelée

YIELD ABOUT 3 KG / 6 LB 9.82 OZ

MACERATED STRAWBERRIES

500 g / 1 lb 1.64 oz fresh strawberries, trimmed

100 g / 3.53 oz sugar

38 g / 1.34 oz balsamic vinegar

VANILLA GELÉE

8 vanilla pods, split and scraped

2 kg / 4 lb 6.55 oz water

500 g / 1 lb 1.64 oz sugar

24 gelatin sheets

1. **FOR THE MACERATED STRAWBERRIES:** Trim the stems off the strawberries. Toss in the sugar to coat. Add the balsamic vinegar. Let macerate until the sugar has dissolved and formed a syrup, about 2 hours.
2. Remove the strawberries from of the liquid and pat dry. Reserve under refrigeration until needed.
3. **FOR THE VANILLA GELÉE:** Combine the vanilla pods and the water. Let the vanilla pods cold-infuse overnight.
4. Bloom the gelatin. Bring 500 g / 1 lb 1.64 oz of the infused water to a boil with the sugar to dissolve the sugar. Melt the gelatin by adding it to the hot vanilla water. Stir until dissolved. Pass through a fine-mesh strainer. Add this mixture to the remaining vanilla water.
5. Fill a half sheet pan lined with plastic wrap halfway with the gelée. The pan should be completely covered with plastic, even the frame. Try to do this on a reach-in refrigerator shelf so that the pan doesn't have to move too much. Let the gelée set in the refrigerator.

6. Pat the macerated strawberries dry with paper towels. Place them on the set gelée. Keep the strawberries 5 cm / 2 in apart from each other. Pour the remaining gelée over the strawberries until it covers the strawberries. If the gelee has set up while setting the strawberries in the pan, warm the mixture slightly to melt the gelatin. Try to do this on a reach-in refrigerator shelf so that the pan doesn't have to move too much. Let the gelée set in the refrigerator.
7. Using a 3.75-cm / 1.5-in square cutter, cut out cubes that surround where the strawberries are set in the gelée. Dip the cutter in hot water and pat it dry before cutting each time.
8. Place each cube on a sheet pan lined with an acetate sheet. Cover with plastic wrap and reserve refrigerated.

9. Using a paring knife, cut the acetate sheets around the gelée cubes. This will make them easy to handle during service, since it is easier to pick up a sheet of acetate than a slippery cube of gelée. Use an offset spatula to pick up the acetate.

NOTE The entire 500 g / 1 lb 1.64 oz of macerated strawberry as listed above may not be needed; use extras to make the sauce.

Almond Lace Tuiles

YIELD 250 G / 8.81 OZ

106 g / 3.74 oz sugar

23 g / .81 oz all-purpose flour

50 g / 1.76 oz almond flour

50 g / 1.76 oz water

23 g / .81 oz butter, melted but cool

1. Combine all of the dry ingredients in the bowl of an electric mixer using the paddle attachment.
2. Slowly pour in the water, then the butter, while the mixer is on.
3. Refrigerate the batter, because once it firms up it is easier to spread.
4. Preheat a convection oven to 160°C / 325°F.
5. Spread a paper-thin layer of batter on a nonstick rubber mat.
6. Bake until the tuile is golden brown, about 6 minutes.
7. Remove it from the oven and slide the nonstick rubber mat onto a marble surface or stainless steel table. Wait a few seconds for it cool down. Use a 3.75-cm / 1.5-in square cutter to cut squares out.
8. If the tuile becomes too hard and it cracks when it is being cut, return it to the oven to soften. This procedure may need to be repeated a few times before the amount of tuiles that is needed is obtained.
9. Reserve in an airtight container at room temperature. Refresh daily in a hot oven for 2 minutes; discard after 3 days.

Strawberry Sauce

YIELD 200 G / 7.05 OZ

200 g / 7.05 oz macerated strawberries

1. Cook the strawberries down over medium-low heat until they thicken to a sauce consistency, about 20 minutes. Skim the sauce as it cooks.
2. Purée the strawberries and pass through a fine-mesh strainer.
3. Reserve refrigerated. Discard leftover sauce after 2 days.

Marzipan Ice Cream with Warm Huckleberry Compote and Almond Financier

YIELD 10 PORTIONS

COMPONENTS

1 kg / 2 lb 3.27 oz HUCKLEBERRY COMPOTE (page 163)

10 ALMOND FINANCIERS

300 g / 10.58 oz MARZIPAN ICE CREAM (page 374)

ASSEMBLY

1. Heat 100 g / 3.53 oz of the compote in a small saucepan. Pour it into a saucier and reserve hot.
2. Place an almond financier at the center of the bowl.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the financier where the cake was cut out.
4. Serve immediately. The warmed huckleberries should be served tableside. Spoon them to one side of the financier, not on top of the ice cream.

Almond Financiers

YIELD 512 G / 1 LB 2.05 OZ

61 g / 2.16 oz almond flour

61 g / 2.16 oz all-purpose flour

144 g / 5.06 oz confectioners' sugar

144 g / 5.06 oz egg whites

103 g / 3.62 oz brown butter, cooled to room temperature

1. Prepare 10 rectangular fleximolds that measure 7.5 cm / 3 in by 2.5 cm / 1 in by 2.5 cm / 1 in to bake the financier. These molds generally come in sets of 12. Place the fleximolds on a half sheet pan and spray lightly with nonstick cooking spray.
2. Preheat an oven to 160°C / 325°F.
3. Combine the dry ingredients in the bowl of an electric mixer on low speed using the paddle attachment. Increase the speed to medium and add the egg whites in several additions, scraping the bowl between additions. Mix until just combined. Scrape down the sides of the bowl. Slowly add the butter until thoroughly incorporated.
4. Pour the batter into a piping bag.
5. Pipe the batter into the prepared molds, four-fifths full (about 50 g / 1.76 oz batter per mold).
6. Bake until golden brown and the financier is baked through all the way at its center, about 9 minutes.
7. Let the financiers cool in the mold, then push the baked financiers out of the mold.
8. Trim the crowns off so they form clean rectangles.
9. Lay a rectangle on its side. Using a 3.75-cm / 1.5-in round cutter, cut out a half-circle from the top half of the financier. This is for the quenelle to eventually sit on.

Milk Chocolate Sorbet with "Perfect" Ganache Cocoa Pods

YIELD 10 PORTIONS

COMPONENTS

120 g / 4.23 oz "PERFECT" GANACHE

50 g / 1.76 oz cocoa nibs

20 MILK CHOCOLATE PODS

300 g / 10.58 oz MILK CHOCOLATE SORBET (page 394)

ASSEMBLY

1. Place a small drop of ganache on the plate.
2. Place 5 g / .18 oz of cocoa nibs on the ganache.
3. Place the cocoa pod with the ganache on the plate, cocoa nibs facing up.
4. Place an empty pod diagonally on top of the first pod.
5. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet on the cocoa nibs and serve immediately.

"Perfect" Ganache

YIELD 500 G / 1 LB 1.63 OZ

91 g / 3.21 oz milk

91 g / 3.21 oz heavy cream

91 g / 3.21 oz trimoline

23 g / .79 oz water

205 g / 7.21 oz dark chocolate (64%), finely chopped

1. Heat the milk, cream, trimoline, and water to a boil. Pour over the chocolate. Mix with a beurre mixer until smooth, about 1 minute.
2. Cool to room temperature.
3. Once cooled, pour into a piping bag if using immediately. Otherwise, refrigerate until needed. Discard after 5 days.

NOTE This ganache is named "perfect" because it holds very well under refrigeration. (It stays smooth and shiny.)

Milk Chocolate Pods

YIELD APPROXIMATELY 24 PODS

10 g / .35 oz tempered cocoa liqueur

200 g / 7.05 oz tempered milk chocolate

150 g / 5.3 oz "Perfect" Ganache (page 247)

50 g / 1.76 oz cocoa nibs

1. Brush the cocoa liqueur into the cocoa bean pod–shaped chocolate mold (the molds yield about 24 pods) and allow it to set.
2. Pour in the milk chocolate. Let it sit for 30 seconds, and then gently tap the mold on a marble surface.
3. Turn the mold over and let the excess chocolate drip out into the bowl with the tempered milk chocolate. Tap on the mold to get all of the excess chocolate out. Thin chocolate shells are critical to this dish. Thick chocolate is hard to cut through with a spoon or fork and does not look good.
4. Place the mold on a wire rack, chocolate facing down.
5. When the chocolate is semi-set, scrape the excess off.
6. Let the chocolate set at room temperature.
7. Once the chocolate has set, unmold the pods by turning the mold over and tapping gently on its back.
8. Fill half of the pods to the top with the ganache.
9. Sprinkle cocoa nibs on top of the ganache before it sets.
10. Reserve in an airtight container at room temperature. Discard after 5 days.

Thyme Ice Cream with Smooth Bitter Chocolate Ganache, Acacia Honey Cake, and Honeycomb

YIELD 10 PORTIONS

COMPONENTS

10 ACACIA HONEY CAKES

50 g / 1.76 oz acacia honey

10 HONEYCOMB pieces

100 g / 3.53 oz SMOOTH BITTER CHOCOLATE GANACHE

10 CHOCOLATE GARNISHES

300 g / 10.58 oz THYME ICE CREAM (page 374)

ASSEMBLY

1. Place a honey cake on the plate. Drizzle about 5 g / .18 oz acacia honey on the cake.
2. Place a honeycomb next to the cake, towards the front end.
3. Spoon 30 g / 1.06 oz of the ganache on the opposite side of the honeycomb, on top of the honey cake. Try to get a round dollop of ganache. Place the chocolate garnish on top of the ganache.
4. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the honey cake between the ganache and the honeycomb, and serve immediately.

Acacia Honey Cakes

YIELD 2 KG / 4 LB 6.55 OZ

170 g / 6 oz almond flour

315 g / 11.11 oz sugar

478 g / 16.86 oz egg yolks

466 g / 16.43 oz egg whites

285 g / 10.05 oz cake flour, sifted

143 g / 5.04 oz butter, melted but cool

143 g / 5.04 oz acacia honey

1. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by .5-cm / .2-in Plexiglas frame on top of the nonstick rubber mat.
2. Preheat an oven to 160°C / 325°F.
3. Combine the almond flour, 257 g / 9.07 oz of the sugar, and the egg yolks in the bowl of an electric mixer. Whip to ribbon stage on high speed, about 8 minutes.
4. Whip the egg whites to medium peak and slowly pour in the remaining 58 g / 2.05 oz sugar. Whip to medium-stiff peaks and fold into the whipped yolk mixture in 2 additions to prevent deflation.
5. Carefully fold in the cake flour. Combine the butter and honey and carefully fold the mixture into the batter.

6. Pour the batter onto the sheet pan and even it out with the frame. Carefully remove the frame.
7. Bake until slightly golden brown on the border, about 8 minutes.
8. Cool to room temperature. Freeze for 1 hour to get a clean cut out of the cake.
9. Cut into rectangles 2.5 cm / 1 in by 10 cm / 4 in by 1.25 cm / .5 in.
10. Reserve in an airtight container at room temperature during service. Discard any leftovers after service.

Honeycomb

YIELD 300 G / 10.58 OZ

300 g / 10.58 oz honeycomb

1. Cut the honeycomb into pieces 2.5 cm / 1 in by 3.75 cm / 1.5 in.
2. Reserve in an airtight container at room temperature. It will last up to 1 month as long as it is not exposed to heat.

Smooth Bitter Chocolate Ganache

YIELD 500 G / 1 LB 1.64 OZ

91 g / 3.21 oz milk

91 g / 3.21 oz heavy cream

91 g / 3.21 oz trimoline

23 g / .81 oz water

205 g / 7.23 oz dark chocolate (60%), finely chopped

1. Bring the milk, cream, trimoline, and water to a boil. Pour over the chocolate. Mix with a beurre mixer until smooth, about 1 minute.
2. Reserve in an airtight container under refrigeration. Discard after 5 days.

Rye Bread Ice Cream with Confiture de Lait and Rye Paper

YIELD 10 PORTIONS

COMPONENTS

350 g / 12.35 oz CONFITURE DE LAIT

40 sheets RYE BREAD PAPER

300 g / 10.58 oz RYE BREAD ICE CREAM (page 373)

ASSEMBLY

1. Spoon a small amount of confiture on the plate (about 5 g / .18 oz).
2. Break a small piece of rye bread paper off of a large piece and place it on the confiture (this will be the anchor for the ice cream).
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the rye bread anchor. Lean a larger piece of rye bread paper next to the quenelle.
4. Spoon 30 g / 1.06 oz of confiture on top of the quenelle and the rye bread paper and serve immediately.

Confiture de Lait

YIELD 500 G / 1 LB 1.64 OZ

1 kg / 2 lb 3.27 oz milk

500 g / 1 lb 1.64 oz sugar

1.5 vanilla pods, split and scraped

1. Bring all of the ingredients to a boil, and then to a simmer over medium-low heat.
2. Cook until it thickens like a caramel sauce, 3 to 4 hours. Strain the mixture.
3. Reserve at room temperature for service, otherwise refrigerate. This sauce will keep for up to 4 months under refrigeration.

Rye Bread Paper

YIELD ABOUT 100 PIECES

One 350-g loaf / One 12.35-oz loaf rye bread bâtard, frozen

1. Trim the crust off the bread with a serrated knife.
2. While it is still frozen, slice it on an electric slicer as thinly as possible.
3. Place the slices in a dehydrator or very low temperature oven (60°C / 140°F). Dry until crisp, about 2 hours.
4. Reserve in an airtight container at room temperature. Discard after 2 days.

"Lemon Meringue Pie"

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz ITALIAN MERINGUE

30 SHORTBREAD COOKIES

600 g / 1 lb 5.16 oz LEMON CURD ICE CREAM (page 359)

ASSEMBLY

1. Pipe 3 small dots of meringue on the plate (about 3 g / .11 oz each), making sure they are evenly spaced and lined up.
2. Place a cookie on top of each meringue dot.
3. Scoop a small quenelle (about 20 g / .71 oz) of the ice cream on top of each cookie.
4. Pipe the meringue on top of each quenelle so it envelops it completely.
5. Torch the meringue to give it an even golden brown color and serve immediately.

Italian Meringue

YIELD 500 G / 1 LB 1.64 OZ

333 g / 11.75 oz sugar

167 g / 5.87 oz egg whites

1 g / .04 oz cream of tartar

1. Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated.
2. Begin whipping the egg whites and cream of tartar on medium speed at the same time that the sugar begins cooking.
3. Cook the sugar to 121°C / 250°F (also known as the soft ball stage).
4. When the sugar has reached 115°C / 240°F, increase the speed of the mixer to high.
5. When the sugar reaches 121°C / 250°F, remove the pot from the heat and shock it in an ice bath.
6. Wait for the egg whites to reach stiff peak and, immediately after, pour the sugar down the side of the bowl and whip until the foam has cooled to room temperature.
7. Reserve in a piping bag fitted with a #4 plain piping tip in refrigeration. Discard any leftover meringue after service.

Shortbread Cookies

YIELD 1.06 KG / 1 LB 5.39 OZ

351 g / 12.36 oz butter, soft

175 g / 6.17 oz sugar

7 g / .25 oz lemon zest

59 g / 2.08 oz rice flour

7 g / .25 oz salt

409 g / 14.43 oz all-purpose flour

50 g / 1.76 oz sugar for sprinkling, as needed

1. Cream the butter, sugar, and lemon zest together in the bowl of an electric mixer on medium speed until smooth, about 5 minutes.
2. Sift together the flours and salt. Add to the butter mixture and mix on slow speed until incorporated.
3. Roll the dough out to 5 mm / .2 in thick and refrigerate until hardened, about 1 hour.
4. Preheat a convection oven to 160°C / 325°F.
5. Cut the shortbread into 2.5-cm / 1-in squares.
6. Sprinkle the sugar on top and score with a fork. Freeze for 20 minutes.
7. Bake until golden brown on the borders, about 5 minutes.
8. Cool to room temperature.
9. Reserve in an airtight container in a cool dry place. Discard after 2 days.

Bosc Pear Sorbet with Brown Sugar Chiffon, Pear Pâte de Fruit, and Pear Compote

YIELD 10 PORTIONS

COMPONENTS

600 g / 1 lb 5.16 oz BOSC PEAR SORBET BASE (page 382)

10 BROWN SUGAR CHIFFON RECTANGLES

10 strips PEAR PÂTE DE FRUIT

50 g / 1.76 oz PEAR COMPOTE

ASSEMBLY

1. Line 10 PVC tubes 7.5 cm / 3 in by 2.5 cm / 1 in diameter with acetate.
2. Line a half sheet pan with a nonstick rubber mat. Place the PVC tubes on the sheet pan in a standing position and freeze.
3. Pacotize the sorbet and transfer to a piping bag. Pipe into the prepared PVC tubes and even out the top with an offset spatula. Each tube should hold about 60 g / 2.11 oz of product. Place in the freezer to harden.
4. Place the brown sugar cake on the plate.
5. Remove the sorbet from its mold and take off the acetate. Lay the sorbet on top of the cake.
6. Torch the sorbet for 1 or 2 seconds in order to take the dull, frozen look away and make it shine.
7. Lay a strip of pâte de fruit across the top of the sorbet.
8. Place 5 g / .18 oz of the compote on the portion of pâte de fruit that rests on the plate.
9. Temper the sorbet for 1 to 2 minutes and serve immediately.

Brown Sugar Chiffon

YIELD 1 KG / 2 LB 3.27 OZ

186 g / 6.56 oz cake flour

86 g / 3.03 oz almond flour

14 g / .49 oz baking powder

214 g / 7.55 oz eggs

186 g / 6.56 oz brown sugar

143 g / 5.04 oz milk

171 g / 6.03 oz hazelnut oil

1. Preheat a convection oven to 160°C / 325°F.
2. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by .75-cm- / .3-in-deep Plexiglas frame inside the sheet pan.

3. Sift all of the dry ingredients together.
4. Combine the eggs and sugar in the bowl of an electric mixer and whip on high speed until they have quadrupled in size, about 10 minutes.
5. Turn the speed down to medium and slowly pour in the milk while the mixer is still running.
6. Pour the dry ingredients into the mix slowly, making sure to scrape the bottom and sides to prevent flour pockets.
7. Pour the oil into the batter in a thin stream.
8. Pour the batter into the prepared sheet pan; make the batter even with the top of the frame and remove the frame.
9. Bake until golden brown, about 7 minutes.
10. Cool to room temperature. Cut into rectangles 2.5 cm / 1 in by 7.5 cm / 3 in.
11. Reserve in an airtight container at room temperature. Discard any leftover cake after service.

Pear Pâte de Fruit

YIELD 2 KG / 4 LB 6.55 OZ

973 g / 2 lb 2.32 oz sugar

22 g / .78 oz pectin

106 g / 3.74 oz powdered glucose

885 g / 1 lb 15.22 oz Bosc pear purée

14 g / .49 oz citric acid

100 g / 3.52 oz sugar, for sprinkling

1. Place a full-size nonstick rubber mat on a marble slab; place a stainless steel frame 40 cm / 16 in by 60 cm / 24 in by 1.75 cm / .5 in on the rubber mat.
2. Combine one-third of the sugar with the pectin in a bowl using a whisk.
3. Combine the remaining sugar with the powdered glucose in a bowl using a whisk.
4. Place the fruit purée in a saucepan and pour in the pectin-sugar mixture slowly, whisking it in carefully to avoid lumps. Bring to a boil.
5. Once it boils, whisk in the glucose-sugar mixture.
6. Cook until the mixture reaches 76° Brix.
7. Remove the pot from the heat and whisk in the citric acid.
8. Pour the mixture into the frame. Once the surface evens out, sprinkle some sugar on top and let it set at room temperature.
9. Once it sets, cut into rectangles 2 mm / .08 in by 7.5 cm / 3 in and coat with more sugar.
10. Reserve in an airtight container at room temperature. Discard once the pâte de fruit begins to dry out.

Pear Compote

YIELD 375 G / 13.23 OZ

250 g / 8.82 oz Bosc pears

100 g / 3.53 oz sugar

1 Tahitian vanilla pod, split and scraped

1 cinnamon stick

25 g / .88 oz water

1. Cut the pears into small dice. In this case it is not necessary that they be completely ripe, but they should not be too underripe either, since they will be cooked.
2. Line a sheet pan with parchment paper.
3. Combine the sugar, vanilla beans, cinnamon, and water in a small saucepan. Cook over high heat until the sugar has turned a light amber color, about 6 minutes.
4. Add the pears and turn the heat down to low; cook until they are just tender.
5. Scoop the pears onto the prepared sheet pan with a slotted spoon and refrigerate immediately to cool.
6. Reserve in an airtight container under refrigeration. Discard after 3 days.

Demerara Sugar Ice Cream with Roasted Kadota Figs and Madeira Glaze

YIELD 10 PORTIONS

COMPONENTS

20 ROASTED KADOTA FIGS

20 g / .71 oz Demerara sugar

600 g / 1 lb 5.12 oz DEMERARA SUGAR ICE CREAM (page 360)

100 g / 3.53 oz MADEIRA GLAZE, warm

ASSEMBLY

1. Cut the figs into quarters. Warm them in a 160°C / 325°F oven for 4 minutes. Place 4 quarters on a plate in a standing position, facing in the same direction.
2. Spoon a small amount of sugar on the plate next to the figs.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the sugar.
4. Spoon 10 g / .35 oz of warm glaze on top of the figs and serve immediately.

Roasted Kadota Figs

YIELD 700 G / 1 LB 8.69 OZ

700 g / 1 lb 8.69 oz Kadota figs

400 g / 14.11 oz Demerara sugar

300 g / 10.58 oz Madeira, or as needed

1. Preheat a convection oven to 120°C / 250°F.
2. Cut an X on the top and the bottom of each fig.
3. Place each fig in a standing position in a hotel pan. Sprinkle sugar on top. Pour the wine on top of the figs (add more if necessary to cover).
4. Roast until the figs are just tender, about 20 minutes.
5. Cool them in the pan. Remove the figs from the pan and place in an airtight container at room temperature during service (otherwise refrigerate).
6. Reserve the liquid for the Madeira glaze. Discard the figs after 1 week.

NOTES Use very ripe figs.

It is possible to add spices and other flavors to the figs before roasting if desired (cinnamon, cloves, vanilla beans, orange zest, etc.).

Madeira Glaze

YIELD 100 G / 3.52 OZ

300 g / 10.58 oz reserved roasting liquid

1. Reduce the liquid in a pot over medium heat until it thickens to a sauce consistency, about 45 minutes. Skim the liquid as it reduces.
2. Pass through a fine-mesh strainer.
3. Reserve hot, covered, during service (in a hot water bath). This liquid can hold up to 1 month.

Chestnut Ice Cream, Crisp Meringue, and Vanilla Sablée Tarts

YIELD 10 PORTIONS

COMPONENTS

600 g / 1 lb 5.16 oz CHESTNUT ICE CREAM BASE (page 361)

2 g / .07 oz corn syrup, or as needed

10 VANILLA SABLÉE TART SHELLS (see next page)

90 CRISP MERINGUE DISKS

½ sheet gold leaf

ASSEMBLY

1. Prepare a piping bag by fitting it with a #4 fluted piping tip.
2. Churn or pacotize the ice cream. Pour into the prepared piping bag and freeze.
3. Place a small drop of corn syrup inside the serving bowl.
4. Place the tart shell on the dot of corn syrup (it will keep the tart shell from sliding).
5. Pipe about 60 g / 2.11 oz of the ice cream into the tart shell in a spiral mound.
6. Shingle 9 meringue disks around the ice cream, overlapping the disks slightly to cover the ice cream.
7. Place a small piece of gold leaf on the top of the tart and serve immediately.

NOTE This dessert is inspired by the classic French dessert "Mont Blanc."

Vanilla Sablée Tart Shells

YIELD 750 G / 1 LB 10.46 OZ

52 g / 1.83 oz bread flour

52 g / 1.83 oz pastry flour

250 g / 8.82 oz cake flour

171 g / 6.03 oz butter, soft

3 g / .09 oz salt

128 g / 4.5 oz confectioners' sugar

1.5 Tahitian vanilla pods, split and scraped

25 g / .88 oz almond flour

71 g / 2.5 oz eggs, at room temperature

1. Sift together the flours.
2. Cream the butter, salt, sugar, vanilla bean seeds, and almond flour using the paddle attachment until evenly mixed, about 3 minutes. Do not overmix or incorporate air.
3. Add the eggs in 4 stages, scraping the bowl after each addition.
4. Add the sifted flours in 4 stages on low speed.
5. Shape the dough into a rectangle. Wrap in plastic wrap and refrigerate for 1 to 2 hours, or until firm.
6. Line a sheet pan with parchment paper and place 10 tart shell rings (7.5 cm / 3 in diameter) on top. The tart rings do not need to be greased. There is enough butter in the dough that the rings will slide right off after baking.
7. Roll the dough to 3 mm / .12 in thick and refrigerate.
8. Cut the dough with a 12.5-cm / 5-in round cutter. Refrigerate again. Save the excess dough. Roll it out again one more time, then discard it because it becomes very tough.
9. Preheat an oven to 160°C / 325°F.
10. Line the tart shells with the cut-out dough circles (don't trim the excess on the top yet). Freeze, then trim the excess dough on the top of the tart ring with a paring knife in order to get a clean cut.
11. Score the dough at the base of the tart with a fork in 3 separate areas. Bake until golden brown, about 7 minutes. The sheet pan might need to be rotated a few times during baking to ensure an even coloring.
12. Cool to room temperature. Remove the tart rings.
13. Reserve in an airtight container at room temperature. Discard after 2 days.

Crisp Meringue Disks

YIELD 333 G / 11.75 OZ

111 g / 3.92 oz egg whites, at room temperature

111 g / 3.92 oz granulated sugar

111 g / 3.92 oz confectioners' sugar, sifted

1. Preheat a convection oven to 100°C / 212°F.
2. Line a full-size sheet pan with a nonstick rubber mat; place a chablon that has rounds 3.75 cm / 1.5 in diameter and is .3 cm / .11 in thick on top of it.
3. Whip the egg whites to medium peak; pour in the granulated sugar as the mixer whips and continue whipping until the meringue has reached a stiff peak.
4. Remove the bowl from the mixer and fold in the confectioners' sugar.
5. Using an offset spatula, spread the meringue over the chablon. Lift the chablon from the mat once the meringue has been spread. Repeat this process until all the meringue has been used.
6. Bake with the vent open for 1 hour, or until the meringue is crisp. Reserve in an airtight container for service. If kept in a dry environment, they will last up to 1 month.

NOTE A chablon is a rubber mat with round perforations; they vary in thickness and diameter.

Port Ice Cream with Brown Butter and Chocolate Pavé

YIELD 10 PORTIONS

COMPONENTS

30 bâtons BROWN BUTTER AND CHOCOLATE PAVÉ

600 g / 1 lb 5.16 oz PORT ICE CREAM (page 361)

100 g / 3.53 oz PORT GLAZE (page 172)

ASSEMBLY

1. Place three pavé bâtons on the plate, evenly spaced with about 2.5 cm / 1 in between each one, lined up in the same direction.
2. Scoop a small quenelle (20 g / .71 oz) of the ice cream onto each piece of pavé.
3. Pour about 5 g / .18 oz of glaze in a straight line across all the quenelles, then another 5 g / .18 oz of glaze in a straight line across the pave. Serve immediately.

Brown Butter and Chocolate Pavé

YIELD 1.65 KG / 3 LB 10.19 OZ

400 g / 14.11 oz dark chocolate (72%), finely chopped

400 g / 14.11 oz milk chocolate, finely chopped

250 g / 8.82 oz Brown Butter (page 214), melted but cool

400 g / 14.11 oz heavy cream

200 g / 7.05 oz fondant

500 g / 1 lb 1.64 oz cocoa powder

1. Place a nonstick rubber mat on a marble surface. Using caramel bars, make a square frame 30 cm / 12 in by 30 cm / 12 in on the rubber mat.
2. Combine the chocolates and the brown butter. Bring the cream and fondant to a boil and pour over the chocolate mixture. Stir with a rubber spatula until emulsified. Try not to incorporate air by stirring too vigorously.
3. Pour the mixture onto a marble surface. Using an offset spatula, agitate the ganache in a scraping/stirring motion, up and down. This will help cool the mixture and will create the proper fat-crystal and sugar-crystal alignment, which will result in a smooth, shiny ganache.
4. Transfer the ganache to the prepared frame. Even out the surface with an offset spatula so that it is flush with the top border of the frame.
5. Let the ganache set at room temperature.
6. Once it is set, cut it with a guitar into rectangles (bâtons) 5 cm / .25 in by 5 cm / 2 in.
7. Toss them in cocoa powder. Tap off the excess and reserve in an airtight container in a cool, dry place. Discard after 1 week.

Prune-Armagnac Ice Cream with Warm Brioche Pain Perdu and Maple Syrup

YIELD 10 PORTIONS

COMPONENTS

1 PULLMAN BRIOCHE LOAF (see Note)

150 g / 5.29 oz clarified butter

500 g / 1 lb 1.64 oz CUSTARD

50 g / 1.76 oz confectioners' sugar

300 g / 10.58 oz PRUNE-ARMAGNAC ICE CREAM (page 362)

100 g / 3.53 oz maple syrup

3 g / .11 oz maple sugar

ASSEMBLY

1. Freeze the brioche loaf, about 2 hours. Trim off the crusts and cut the brioche into 4-cm / 1.5-in cubes.
2. Place a small nonstick pan over medium-high heat with enough clarified butter to form an even film at the base of the pan (about 15 g / .53 oz).
3. Soak 3 brioche cubes generously in the custard, and let any excess drip off them.
4. When the butter is very hot, brown the cubes evenly, about 1 minute per side. Since the cubes are small, they will cook quickly. Coat each cube with confectioners' sugar and place 3 on a plate or in a bowl.
5. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of one of the cubes.
6. Drizzle 10 g / .35 oz of maple syrup on top of the pain perdu and ice cream. Sprinkle maple sugar on top of the ice cream and the pain perdu and serve immediately.

NOTES The older the bread, the better (because dry bread will absorb the custard better), within reason.

For the brioche loaf, follow the recipe for Toasted Brioche Croutons (page 169) through step 7.

Custard

YIELD 500 G / 1 LB 1.64 OZ

232 g / 8.18 oz eggs

3 g / .11 oz salt

34 g / 1.2 oz sugar

231 g / 8.15 oz milk

.75 g / .03 oz ground cinnamon

.25 g / .01 oz vanilla powder

1. Mix all of the ingredients thoroughly in a bowl.
2. Pass through a fine-mesh strainer and reserve refrigerated until needed. Discard after 2 days.

Cinnamon Ice Cream with Crema Catalana and Cinnamon Anglaise

YIELD 10 PORTIONS

COMPONENTS

80 g / 2.82 oz CINNAMON ANGLAISE (page 209)

10 CREMA CATALANA RECTANGLES

100 g / 3.53 oz superfine sugar

300 g / 10.58 oz CINNAMON ICE CREAM (page 363)

ASSEMBLY

1. Spoon about 8 g / .28 oz anglaise onto the plate.
2. Place a custard rectangle on a wire rack. Sprinkle the top with superfine sugar and caramelize with a torch. Place the custard on the plate.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the custard and serve immediately.

Crema Catalana

YIELD 2 KG / 4 LB 6.55 OZ

1.42 kg / 3 lb 2.09 oz milk

2 cinnamon sticks

5 g / .18 oz lemon zest

381 g / 13.44 oz sugar

171 g / 6.03 oz egg yolks

15 g / .53 oz cornstarch

12 g / .42 oz gelatin sheets, bloomed

1. Line a flat sheet pan with an acetate sheet. Place a 25 cm / 10 in by 38 cm / 15 in by 1.75 cm / 0.68 in Plexiglas frame inside the sheet pan on top of the acetate.
2. Combine the milk with the cinnamon, lemon zest, and half of the sugar and bring to a boil.
3. Meanwhile, whisk together the egg yolks with the remaining sugar and the cornstarch.
4. Temper the yolk mixture with the boiled milk and cook over medium heat, stirring constantly, until it just comes to a boil.
5. Remove the pot from the heat and stir in the bloomed gelatin.
6. Pour the custard into the prepared frame. Tap the sheet pan down to even out the custard.
7. Freeze until hardened, about 2 hours.
8. Cut the custard into rectangles 1.75 cm / .68 in by 12.5 cm / 5 in and refrigerate, covered with plastic wrap, until needed. Discard after 4 days.

Chocolate-Lemon Ice Cream with Lemon Pound Cake Croutons and Chocolate Tumbleweeds

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz LEMON SAUCE

140 LEMON POUND CAKE CROUTONS

300 g / 10.58 oz CHOCOLATE-LEMON ICE CREAM (page 375)

10 CHOCOLATE TUMBLEWEEDS

ASSEMBLY

1. Drizzle about 10 g / 3.53 oz lemon sauce at the center of the plate. Drizzle a few drops of sauce around the plate.
2. Place 9 pound cake cubes at the center of the plate (the sauce will keep the cubes in place). Place 5 more cubes around the plate.
3. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the croutons at the center of the plate.
4. Place the chocolate tumbleweed on top of the quenelle and serve immediately.

Lemon Sauce

YIELD 400 G / 14.1 OZ

300 g / 10.58 oz glucose syrup

100 g / 3.53 g lemon juice

1. Stir together the syrup and lemon juice. The texture should be that of a thick syrup. Adjust the consistency if necessary.
2. Reserve under refrigeration until needed. Discard after 5 days.

Lemon Pound Cake Croutons

YIELD 1 KG / 2 LB 3.27 OZ

241 g / 8.5 oz butter, at room temperature

196 g / 6.91 oz eggs, at room temperature

241 g / 8.5 oz pastry flour

2 g / .06 oz baking powder

1 g / .04 oz salt

253 g / 8.92 oz granulated sugar

13 g / .46 oz lemon zest

54 g / 1.9 oz crème fraîche

25 g / .88 oz confectioners' sugar, or as needed

1. Preheat an oven to 160°C / 325°F.
2. Grease a half sheet pan and line it with parchment paper.
3. Ideally pull the butter out of refrigeration 3 hours before it is needed. The best butter temperature is 22°C / 72°F.
4. Warm the eggs up to 26°C / 80°F over a hot water bath.
5. Sift the pastry flour, baking powder, and salt together twice.
6. In the bowl of a 12-qt electric mixer, cream the butter, granulated sugar, and lemon zest for 7 minutes on medium speed using the paddle attachment.
7. Add the eggs slowly in 3 to 4 additions, scraping the sides and bottom of the bowl after each addition.
8. Stop the mixer and add the flour mixture. Mix on low speed until just combined. Scrape the sides and base of the bowl and mix for a few more seconds.
9. Add the crème fraîche and mix until just combined.
10. Spread onto the prepared sheet pan and bake until the center of the cake springs back when gentle pressure is applied with a finger, about 15 minutes.
11. Cool to room temperature. Once cooled, freeze for 2 hours before cutting.
12. Cut into .5-cm / .2-in cubes and toss in confectioners' sugar.
13. Toast in the oven until crispy (not completely dried out) and golden brown, about 10 minutes.
14. Cool the croutons and reserve in an airtight container at room temperature. Discard after 3 days.

Chocolate Tumbleweeds

YIELD 300 G / 10.58 OZ

300 g / 10.58 oz dark chocolate (64%), finely chopped, or as needed

1. Freeze several half sheet pans and leave them in the freezer until needed.
2. Melt the chocolate over a double boiler.
3. Make a cornet out of parchment paper.
4. Cut a very small opening on the cornet tip (thin is better than thick).
5. Turn the frozen half sheet pan upside down and lengthwise in front of you.
6. Visually, divide the half sheet pan into 4 lengthwise sections. (There will be 4 tumbleweeds per half sheet pan).
7. Using the cornet, pipe very straight lines along the sheet pan, as close together as possible (some overlap is okay).
8. When the chocolate is semi-set, take one end of the chocolate strips and roll them away from you as you pull them off the half sheet pan to form a nest. Handle with care and avoid touching them too much (warm hands might damage their shape).
9. Store in an airtight container, nested between parchment paper, under refrigeration.

NOTE There is no need to temper the chocolate. It only needs to be melted.

Espresso Cardamom Ice Cream with Warm Chocolate Beignets

YIELD 10 PORTIONS

COMPONENTS

50 g / 1.76 oz ESPRESSO GLAZE

20 g / .71 oz cocoa nibs

50 WARM CHOCOLATE BEIGNETS

300 g / 10.58 oz ESPRESSO CARDAMOM ICE CREAM (page 362)

ASSEMBLY

1. Brush 5 g / .18 oz of espresso glaze in a straight line across the plate, from end to end.
2. Place a pinch of cocoa nibs on the right side of the glaze toward the middle, without them actually touching the glaze. Place a line of coca nibs along one side of the glaze.
3. Place 5 warm beignets on the glaze in a straight line opposite the line of coca nibs near the glaze. If the beignets are fried in advance, reheat them in a 160°C / 325°F oven for 3 to 4 minutes. Ideally, the beignets should be fried to order.
4. Scoop a medium quenelle (30 g / 1.06 oz) of the ice cream on top of the pinch of cocoa nibs and serve immediately.

NOTE If frying the beignets to order, proof them for 5 to 7 minutes in a warm place (next to a hot oven, for example), then fry until golden brown. Toss them in sugar as soon as they come out of the fryer.

Espresso Glaze

YIELD 110 G / 3.88 OZ

50 g / 1.76 oz concentrated espresso

60 g / 2.11 oz corn syrup

Mix the espresso and corn syrup together and reserve at room temperature. This will last up to 1 month.

NOTE For the concentrated espresso, use 3 times the amount of espresso beans than would be used for regular espresso, about 15 g / .53 oz espresso beans to 50 g / 1.76 oz water.

Warm Chocolate Beignets

YIELD 1 KG / 2 LB 3.27 OZ

88 g / 3.1 oz eggs

7 g / .25 oz vanilla paste

243 g / 8.57 oz milk, at 16°C / 60°F

486 g / 1 lb 1.14 oz bread flour

12 g / .42 oz instant dry yeast

59 g / 2.08 oz sugar

4 g / .14 oz salt

59 g / 2.08 oz butter

44 g / 1.55 oz egg yolks

50 g / 1.76 oz dark chocolate, finely chopped

2 kg / 4 lb 6.55 oz canola oil, for frying

50 g / 1.76 oz sugar, for tossing, or as needed

1. Mix using the straight dough method: Place the eggs, vanilla paste, and milk in the bowl of an electric mixer first, then the flour, yeast, sugar, and salt, and finally the butter on top. Mix on medium speed using a dough hook until full gluten development is achieved.
2. Let the dough bulk ferment at room temperature for 30 minutes.
3. Fold the dough onto itself and ferment for another 30 minutes.
4. Roll the dough to .5 cm / .25 in thick. Relax the dough for 30 minutes.
5. Score half of the dough using a 1.25-cm / .5-in round cutter. Egg wash the scored half with the egg yolks.
6. Place a small amount (about 1 g) of chocolate where the dough was scored.
7. Fold the clean half of the dough onto the chocolate half. Press down with your hands so you can see where the chocolate sits.
8. Using the dull side of the same 1.25-cm / .5-in cutter, score the dough where the chocolate sits. This is just to make sure that the dough has adhered. Using a 2.5-cm / 1-in cutter, cut around the chocolate.
9. Proof at 29°C / 84°F for 20 to 25 minutes, or until the dough has doubled in size.
10. While the beignets proof, heat the oil in a fryer to 180°C / 360°F.
11. Fry the beignets in the canola or peanut oil until they are golden brown, about 2 minutes, stirring constantly as they fry to ensure proper coloring.
12. As soon as they come out of the fryer, toss them in the sugar. Serve immediately.

Lemongrass Semifreddo with Coconut Bubbles and Black Sesame Seed Glass

YIELD 10 PORTIONS

COMPONENTS

2 kg / 4 lb 6.55 oz LEMONGRASS SEMIFREDDO BASE (page 405)

10 COCONUT BUBBLES

10 pieces BLACK SESAME SEED GLASS

ASSEMBLY

1. Place a sheet of acetate on a cutting board and freeze.
2. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 2.5-cm / 1-in Plexiglas frame inside the sheet pan and freeze.
3. Pour the semifreddo base into the frozen sheet pan.
4. Line a half sheet pan with a nonstick rubber mat and freeze.
5. Once the semifreddo has hardened, flip it onto the frozen cutting board.
6. Dip a slicing knife into very hot water and cut into rectangles 3.75 cm / 1.5 in by 10 cm / 4 in.
7. Transfer the pieces to the frozen sheet pan as soon as they are cut.
8. Once all the semifreddo is cut and hardened, transfer to an airtight container. Reserve frozen until needed. Discard after 3 days.
9. Place a semifreddo rectangle on the plate. Torch it for 2 or 3 seconds to smooth out the surface and evaporate any frost accumulation.
10. Temper for 3 to 4 minutes.
11. Spoon a mound of coconut bubbles on top of the semifreddo.
12. Place the sesame glass on top of the bubbles and serve immediately.

Coconut Bubbles*

YIELD 635 G / 1 LB 6.4 OZ

250 g / 8.82 oz unsweetened coconut milk

375 g / 13.23 oz water

100 g / 3.53 oz sugar

10 g / .35 oz soy lecithin powder

1. Pass the coconut milk through a fine-mesh strainer and weigh out the required amount. There should be 150 g / 5.29 oz after straining.

2. Combine the coconut milk with the water and sugar. Using a beurre mixer, pour in the soy lecithin powder slowly as the blender mixes the ingredients. The intention is to incorporate and trap as much air as possible to create bubbles; to do this, slightly tilt the bowl in which the coconut milk is being mixed and expose the blender part of the beurre mixer slightly above the liquid's surface.
3. The mixture will need to re-blend before each plating to re-incorporate air. Discard the liquid after service.

NOTES Be very gentle when handling the bubbles to avoid popping them.

Bubbles are formed thanks to the incorporation of soy lecithin, which is a protein that helps trap air in a liquid. If handled carefully, the bubbles can last whole (without popping) for up to 10 minutes or more.

*This recipe was inspired by Ferran Adrià from El Bulli, in Spain.

Black Sesame Seed Glass

YIELD 575 G / 1 LB 4.27 OZ

500 g / 1 lb 1.64 oz isomalt

50 g / 1.76 oz water

25 g / .88 oz black sesame seeds

1. Cook the isomalt with the water in a small saucepan to 145°C / 293°F.
2. Pour onto a nonstick rubber mat. Sprinkle the sesame seeds evenly over the surface and place another nonstick rubber mat on top. Roll out as thinly as possible with a rolling pin. Heat in a 160°C / 325°F oven for about 30 seconds so the seeds bind to the sugar.
3. Before the isomalt cools completely, start pulling it as thinly as you can with your fingers. Cut off 7.5-cm- / 3-in-long by 5-cm- / 2-in-wide pieces with a pair of scissors. If the isomalt is too hot and you can't pull it effectively, wait for it to cool until it is pliable.
4. Try to obtain similar-looking pieces (it will be impossible to make them identical). If it hardens too much, it can be softened in the oven for a few seconds.
5. These pieces are very fragile. Reserve in a safe, airtight container and handle very carefully. If kept in a dry environment, they can last up to 1 month.

NOTE Use 2 or 3 pairs of vinyl or latex gloves when you are handling the hot sugar with your hands.

For Coconut Glass, substitute 100 g / 3.53 oz toasted dessicated coconut for the black sesame seeds and reduce the water amount to 25 g / .88 oz, then proceed with the recipe. For the entremet on page 275, cut the coconut glass into 5-cm / 2-in squares using scissors.

Pumpkin Gelato with Gingerbread Sablée Breton, Candied Pepitas, and Caramel Paper

YIELD 10 PORTIONS

COMPONENTS

10 GINGERBREAD SABLÉE BRETON SQUARES

10 PUMPKIN GELATO CUBES

200 g / 7.05 oz CANDIED PEPITAS

10 sheets CARAMEL PAPER

300 g / 10.58 oz CARAMELIZED PUMPKIN

5 g / .18 oz GINGERBREAD SPICE

ASSEMBLY

1. Place a gingerbread square on the plate.
2. Place an ice cream cube on the gingerbread. Torch the cube for 2 or 3 seconds to remove any frost.
3. Place 10 g / .35 oz of the candied pepitas in a mound on top of the cube.
4. Lean a piece of caramel paper on one side of the cube.
5. Place a small mound (about 30 g / 1.06 oz) of caramelized pumpkin next to the ice cream cube.
6. Place a thin straight line of gingerbread spice on the plate, in front of the cube, and serve immediately.

Gingerbread Sablée Breton

YIELD 500 G / 1 LB 1.64 OZ

162 g / 5.71 oz all-purpose flour

77 g / 2.72 oz confectioners' sugar

94 g / 3.32 oz almond flour

2 g / .07 oz ground ginger

.5 g / .02 oz ground cinnamon

1 g / .03 oz ground cloves

.5 g / .02 oz ground nutmeg

94 g / 3.32 oz butter

4 g / .14 oz salt

65 g / 2.29 oz butter, melted

1. Preheat a convection oven to 160°C / 325°F.
2. In the bowl of an electric mixer, mix the flour, confectioners' sugar, almond flour, spices, the first measure of butter, and salt with the paddle attachment on medium speed until it comes together in a shaggy mass.
3. Roll the dough to 3 mm / .12 in thick. Bake until dry, about 8 minutes.

4. Line a half sheet pan with a nonstick rubber mat. Place a Plexiglas frame 25 cm / 10 in by 38 cm / 15 in by 3 mm / .12 in inside.
5. When the baked dough cools, grind in a robot coupe and add the melted butter as it grinds. It will form a ball. Press into the prepared sheet pan. Place a sheet of parchment paper on top of the sablée and roll down with a wooden dowel to even it out with the frame in place.
6. Return to the oven and bake for five more minutes. Freeze.
6. Cut into 5-cm / 2-in squares while frozen.
7. Reserve refrigerated until needed.

Pumpkin Gelato Cubes

YIELD 1 KG / 2 LB 3.27 OZ (500 G / 1 LB 1.63 OZ IN EACH BEAKER IF USING A PACOJET)

1 kg / 2 lb 3.27 oz Pumpkin Ice Cream base (page 363)

1. Before pacotizing or churning the ice cream, line a sheet pan with a nonstick rubber mat and a 25 cm / 10 in by 25 cm / 10 in by 5-cm / 2-in stainless steel or Plexiglas frame. Line another sheet pan with a nonstick rubber mat and place both sheet pans in the freezer.
2. A 5-cm- / 2-in-deep frame will hold a little over 4 L /4 qt of liquid, but don't forget to take overrun into account. In this case, there should be an overrun of 20 percent.
3. Pacotize or churn the ice cream base. Pour into the prepared frame. Using an offset spatula, spread the ice cream evenly so that it fits exactly into the frame and remove any excess. Freeze to harden.
4. Once the ice cream has hardened, use a 5-cm / 2-in square cutter to cut out cubes. Dip the cutter into room temperature (not hot) water each time in order to get a clean cut.
5. Place the ice cream squares on the other frozen sheet pan. Let them harden again.
6. Transfer to an airtight container and reserve frozen until needed. Discard any leftover cubes after service.

Candied Pepitas

YIELD 300 G / 10.58 OZ

500 g / 1 lb 1.64 oz sugar

5 g / .18 oz lemon juice

250 g / 8.82 oz pepitas

1. Line a full-size sheet pan with parchment paper. Place a wire cooling rack over the sheet pan and spray it with nonstick cooking spray. Place the sheet pan near a marble surface. Have 3 pairs of latex gloves available.
2. Place the sugar in a saucepan with about one-quarter of its weight in water or enough to obtain a wet-sand texture. Add the lemon juice to prevent crystallization. Make sure there are no sugar crystals along the inside of the pot and that all the sugar has been hydrated. Begin cooking the sugar over high heat.

3. Toast the seeds until they begin to have a toasted aroma and a light brown color in a 160°C / 325°F oven for about 6 minutes. If the sugar has not caramelized by this point, keep the seeds hot until it does. They can be kept in the oven, but turn it off and open the oven door slightly. If cold seeds are added to the sugar, it will crystallize.
4. Cook the sugar over high heat until it reaches 170°C / 338°F. Turn the heat down to low and stir in the toasted seeds. Make sure all the seeds are coated in sugar and continue to stir until you start hearing a popping sound, about 45 seconds, then pour the contents of the pot over the greased wire rack.
5. Put on the 3 pairs of gloves and spray nonstick cooking spray on them. Working very quickly, separate the seeds from each other and immediately place them on the marble to cool quickly.
6. Reserve in an airtight container at room temperature. If kept in a dry environment, they will keep for 1 week.

NOTE Be careful when making this recipe in humid conditions. You need to be careful in humid conditions because the sugar is hygroscopic and could absorb water.

Caramel Paper

YIELD 620 G / 1 LB 5.86 OZ

500 g / 1 lb 1.64 oz sugar

100 g / 3.53 oz water

20 g / .71 oz lemon juice

1. Cook all of the ingredients together over high heat until they reach 176°C / 350°F.
2. Pour onto a nonstick rubber mat. Allow the mixture to cool to room temperature.
3. Grind the mixture in a *robot coupe* until it turns into powder.
4. Meanwhile, preheat an oven to 160°C / 325°F.
5. Spread the ground caramel on a nonstick rubber mat in an even, single layer. Bake until it fuses into a solid sheet, about 3 minutes.
6. Let the caramel cool on the nonstick rubber mat.
7. Break into evenly sized pieces (about .25 cm / .5 in by 7.6 cm / 3 in).
8. Reserve in an airtight container at room temperature in a cool, dry place. If kept in a dry environment, the caramel paper will last indefinitely.

Caramelized Pumpkin

YIELD 1 KG / 2 LB 3.27 OZ

1 kg / 2 lb 3.27 oz sugar

300 g / 10.58 oz water

30 g / 1.06 oz lemon juice

1 kg / 2 lb 3.27 oz pumpkin, skin and seeds removed, cut into 1.75-cm / .68-in wedges

1. Combine the sugar, water, and lemon juice in a medium saucepan. Cook over high heat until the sugar has turned an amber-brown color.
2. Turn the heat down to medium low and add the pumpkin wedges.
3. Cook until the pumpkin has absorbed the sugar and is translucent.
4. Using a slotted spoon, remove the pumpkin from the sugar and place on a sheet pan lined with parchment paper. Let cool to room temperature, then cover with plastic wrap.
5. Reserve at room temperature in an airtight container. Discard after 2 days.

Gingerbread Spice

YIELD 26 G / .91 OZ

10 g / .35 oz ground cinnamon

8 g / .28 oz ground ginger

5 g / .18 oz ground cloves

3 g / .11 oz ground nutmeg

Combine all of the spices and reserve in an airtight container at room temperature.

Vanilla Ice Cream Milk Shakes with Mini Craquelins

YIELD 10 PORTIONS

COMPONENTS

10 MINI CRAQUELINS

700 g / 1 lb 8.69 oz VANILLA ICE CREAM (page 364)

200 g / 7.05 oz whole milk

5 g / .18 oz Tahitian vanilla powder

ASSEMBLY

1. Place 1 craquelin in a 160°C / 325°F convection oven until warm, about 2 minutes.
2. For the milk shake: Combine 70 g / 2.47 oz ice cream with 20 g / .71 oz whole milk and blend together. It needs to be a powerful blender with enough horsepower (and rpm) to ensure a thorough blend.
3. Fill a 90 ml / 3 fl oz glass to the top with the milk shake. Sprinkle some vanilla powder on top of the milk shake.
4. Place the milk shake on a plate with the craquelin behind it and serve immediately.

NOTES Milk shakes in general should be served immediately after blending, because the milk is at a higher temperature than the ice cream, and this will promote a very quick formation of large ice crystals that will compromise the smoothness of the milk shake.

Use a long, thin spoon to serve.

Mini Craquelins

YIELD 500 G / 1 LB 1.63 OZ

BRIOCHE DOUGH

398 g / 14.03 oz bread flour

159 g / 5.61 oz eggs

10 g / .35 oz salt

59 g / 2.08 oz sugar

5 g / .18 oz instant dry yeast (Gold Label)

92 g / 3.25 oz milk

203 g / 7.16 oz butter, soft

CRAQUELINS

462 g / 16.29 oz Brioche Dough

6 g / .21 oz lemon zest

33 g / 1.16 oz sugar cubes

100 g / 3.53 oz egg wash

50 g / 1.76 oz sanding sugar

1. **FOR THE BRIOCHE DOUGH:** Combine the flour, eggs, salt, sugar, yeast, milk, and 51 g / 1.8 oz of the butter on low speed with a dough hook attachment for 4 minutes. Mix on high speed for 4 minutes.
2. Add the remaining butter in 4 stages, scraping down the sides of the bowl between each addition. The dough should have full gluten development, which will be achieved during mixing. Wrap and place in the refrigerator overnight.
3. **FOR THE CRAQUELINS:** Combine 289 g / 10.19 oz of the brioche dough with the lemon zest in a mixer using a hook attachment on low speed for 10 seconds, then scale out to 30-g / 1.06-oz pieces. These will be the middles of the craquelins.
4. Cut the sugar cubes into quarters and add 4 quarters to each middle by pushing them into the dough. Make sure the sugar cubes are completely enclosed, with no exposed sugar on the sides, and are toward the center of the dough. Chill the middles until firm.
5. Scale out the tops from the remaining 173 g / 6.1 oz brioche dough (15 g / .53 oz per top). Roll each piece into a 6-mm- / .25-in-thick round disk. Brush egg wash lightly on the tops and middles. Place 1 middle in the center of each top. Enclose the top around the middles, making sure there is no exposure and everything is sealed.
6. Grease ten 57-g/2-oz aluminum cups with nonstick cooking spray. Place the craquelins into the cups, making sure the seam side is down. Lightly flatten the top and brush with egg wash. Proof at 29°C / 84°F at 80 percent humidity until they reach the tops of the cups, about 45 minutes.
7. Preheat a convection oven to 182°C / 360°F with the fan on high speed.
8. Brush with egg wash again, sprinkle heavily with sanding sugar, and score the top of the dough with scissors 6 mm / .25 in deep (only 1 cut).
9. Bake for 3 minutes. Rotate, turn the oven down to 148°C / 300°F, and reduce the fan speed to low. Bake until golden brown or until the internal temperature reaches 88°C / 190°F to 93°C / 200°F, about 7 minutes. Rotate periodically.
10. Once they are baked, remove from the aluminum cups and let them cool at room temperature.
11. Reserve in an airtight container at room temperature. Discard any leftovers after service.

Raspberry Sorbet and Marzipan Ice Cream Terrine

YIELD 10 PORTIONS

COMPONENTS

2 kg / 4 lb 6.55 oz RASPBERRY SORBET BASE (page 389)

3 kg / 6 lb 9.81 oz MARZIPAN ICE CREAM BASE (page 374)

100 g / 3.53 oz TOASTED MARCONA ALMONDS (page 120)

ASSEMBLY

1. For the terrine: Line 6 PVC tubes 25 cm / 10 in by 1.75 cm / .68 in diameter with acetate.
2. Churn the sorbet base and pour into a piping bag. Pipe into the prepared tubes and freeze to harden.
3. After the sorbet has hardened, line 2 PVC tubes 25 cm / 10 in by 7.5 cm / 3 in diameter with acetate.
4. Remove the sorbet from the PVC tubes and take the acetate off. Return to the freezer.
5. Churn the ice cream and pour into a piping bag. Pipe into the prepared PVC tubes. Insert 3 sorbet tubes into each ice cream–filled tube. Keep the sorbet in a triangle pattern. Make sure the raspberry tubes don't touch each other.
6. Place in the freezer to harden.
7. Line a sheet pan with a nonstick rubber mat and freeze.
8. Once the terrine has hardened, remove it from the PVC tube and take the acetate off. Cut 5-cm / 2-in-wide pieces using a very hot slicing knife, dipping the knife in hot water each time and drying it with absorbent paper towels. Place the slices on the frozen sheet pan and return to the freezer.
9. Once the terrine is cut and re-hardened in the freezer, transfer the slices to an airtight container and return to the freezer until needed.
10. Place 10 g / .35 oz toasted almonds on each plate.
11. Place a terrine slice on the toasted almonds. Torch it for 2 to 3 seconds.
12. Let it temper for 3 to 4 minutes and serve.

Cajeta Ice Cream with Rice Paper

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz cajeta (as a sauce)

40 pieces rice paper

600 g / 1 lb 5.15 oz CAJETA ICE CREAM (page 375)

ASSEMBLY

1. Spoon 10 g / .35 oz of cajeta on the plate in a straight line.
2. Break the rice paper into random pieces, about 7.5 cm / 3 in long (reserve small pieces to anchor the ice cream). Place 3 small pieces of rice paper on top of the cajeta, with a 1.75-cm / .5-in space between each one.
3. Scoop 3 small quenelles (20 g / .71 oz each) of the ice cream onto the rice paper pieces. Place one next to the other, all pointing in the same direction.
4. Place a large piece of rice paper between each quenelle and at the ends (4 pieces total) and serve immediately.

Spice Bombe with Jasmine Tea Ganache and Cocoa Croquant

YIELD 10 PORTIONS

COMPONENTS

10 JASMINE TEA GANACHE SQUARES

10 SPICE BOMBE SPHERES

10 pieces COCOA CROQUANT

3 g / .11 oz JASMINE TEA POWDER

ASSEMBLY

1. Place a ganache square on the plate.
2. Place the spice bombe sphere next to the ganache.
3. Lean a piece of croquant on the sphere away from the ganache cube.
4. Sprinkle jasmine tea powder on the plate in a thin straight line.
5. Let the bombe temper for 4 to 5 minutes and serve. This will also help soften the ganache.

Jasmine Tea Ganache

YIELD 1.04 KG / 2 LB 4.68 OZ

225 g / 7.94 oz milk

263 g / 9.28 oz heavy cream

3 g / .11 oz jasmine tea leaves

450 g / 15.87 oz bitter chocolate (64%), finely chopped

100 g / 3.53 oz butter, soft

250 g / 8.82 oz cocoa powder

1. Line a half sheet pan with a nonstick rubber mat. Place a stainless steel frame 25 cm / 10 in by 38 cm / 15 in by 3.5 cm / 1.5 in on top of the rubber mat.
2. Bring the milk and cream to a boil with the tea leaves. Let it steep for 5 minutes off the heat and strain the mixture through a fine-mesh strainer.
3. Bring the infused liquid up to a rolling boil again and pour over the chocolate. Let it sit for 45 seconds. Stir with a rubber spatula until the chocolate has melted. Try to not stir too hard or to stir air into the ganache (to prevent bubble formation).
4. Add the butter and stir until it has melted.
5. Pour the contents into the prepared sheet pan and spread evenly. Refrigerate.
6. Once hardened, trim off the borders and cut into 3.75-cm / 1.5-in squares. Dust the top with cocoa powder, reserve refrigerated. Discard after 5 days.

Spice Bombe Spheres

YIELD 600 G / 1 LB 5.15 OZ

500 g / 1 lb 1.64 oz ASIAN SPICE BOMBE BASE (page 406)

200 g / 7.05 oz DARK CHOCOLATE SPRAY

1. Pipe (25 g / .88 oz) of the base into each of twenty 7.5-cm / 3-in diameter demi-sphere fleximolds and freeze until hardened.
2. Unmold the demi-spheres and fuse 2 to form a sphere by gently rubbing the seam where both demi-spheres touch with your gloved hands.
3. Place in the freezer until hardened. Meanwhile, prepare a spraying area. Melt the chocolate spray to 38°C / 100°F and load the compressor.
4. Remove the spheres from the freezer and spray them immediately. Refreeze.
5. Reserve until needed in an airtight container. Discard any remaining spheres after 3 days.

Dark Chocolate Spray

YIELD 500 G / 1 LB 1.63 OZ

250 g / 8.81 oz dark chocolate (64%), finely chopped

250 g / 8.81 oz cocoa butter, finely chopped

1. Heat the chocolate and cocoa butter together to 100°F / 38°C.
2. Reserve warm until needed.

Cocoa Croquant

YIELD 1 KG / 2 LB 3.27 OZ

435 g / 15.34 oz sugar

435 g / 15.34 oz glucose syrup

131 g / 4.62 oz dark chocolate pâte à glacer

1. Place a nonstick rubber mat on a marble surface.
2. Cook the sugar and glucose syrup to 158°C / 316°F over high heat.
3. Remove the pan from the heat and add the pâte a glacer. Pour onto the nonstick rubber mat.
4. Put on 3 pairs of latex gloves and start pulling on the sugar when it has cooled down a little bit (if it's too hot, it won't pull very well). Pull as thinly as you can into pieces 2.5 cm / 1 in by 10 cm / 4 in. It is crucial that this sugar be as thin as possible; when it is thick it is unpleasant to eat.
5. If the sugar hardens, place the nonstick rubber mat on a sheet pan and warm it in a hot oven for a few seconds until it is pliable. It is impossible to get identical shapes, but try to get them as uniform as possible.
6. Reserve in an airtight container with silica gel packets (to prevent the sugar from absorbing moisture) at room temperature.

Jasmine Tea Powder

YIELD 10 G / .35 OZ

10 g / .35 oz jasmine tea

1. Grind the jasmine tea in a coffee grinder and sift through a fine-mesh strainer.
2. Reserve at room temperature.

Frozen Mexican Chocolate Soufflés with Warm Berliners

YIELD 10 PORTIONS

COMPONENTS

1 kg / 2 lb 3.27 oz FROZEN MEXICAN CHOCOLATE SOUFFLÉ BASE (page 408)

300 g / 10.58 oz DARK CHOCOLATE SPRAY (page 290)

100 g / 3.53 oz melted dark chocolate

10 warm BERLINERS

10 CHOCOLATE GARNISHES

100 g / 3.53 oz superfine sugar

ASSEMBLY

1. Line 10 stainless steel tubes or PVC pipes 10 cm / 4 in by 3.75 cm / 1.5 in diameter with acetate.
2. Pipe the soufflé base into the prepared tubes. Even out the top with an offset spatula. Place in the freezer until hardened.
3. Prepare a spraying area. Melt the chocolate spray to 38°C / 100°F and load the compressor.
4. Once hardened, remove the frozen soufflés from the tubes. Remove the acetate from each soufflé. Place them on a sheet pan lying down and spray them immediately. Refreeze.
5. Pour the melted chocolate into a parchment paper cone (cornet).
6. Drizzle a very thin stream of chocolate on top of the frozen soufflés.
7. Reserve frozen in an airtight container until needed.
8. Heat the fryer to 185°C / 365°F.
9. Proof the Berliner pieces in a very warm place (on top of a hot oven, for example) for 7 minutes, or until doubled in size.
10. Fry until golden brown, about 1 minute.
11. While the Berliner fries, remove a frozen soufflé from the freezer and put on a plate. Lean a chocolate garnish on the soufflé.
12. Toss the fried Berliner in superfine sugar as soon as it comes out of the fryer.
13. Place the Berliner next to the frozen soufflé and serve immediately.

Berliners

YIELD 1 KG / 2 LB 3.27 OZ

76 g / 2.68 oz eggs

31 g / 1.09 oz egg yolks

229 g / 8.08 oz milk, at 21°C / 70°F

254 g / 8.96 oz bread flour

254 g / 8.96 oz pastry flour

14 g / .49 oz instant dry yeast (Gold Label)

51 g / 1.8 oz sugar

10 g / .35 oz malt syrup

8 g / .28 oz salt

75 g / 2.65 oz butter, diced, soft

1. Place the eggs, egg yolks, and milk in the bowl of an electric mixer first, then the flours, yeast, sugar, malt, and salt, and finally the butter on top. Mix on low speed with the dough hook attachment until all of the ingredients have been thoroughly combined and the sides of the mixing bowl are clean. Mix on high speed until the dough has reached full gluten development. The final dough temperature should be 27°C / 80°F.
2. Bulk ferment the dough for 20 to 30 minutes. Portion into 20-g/.71-oz pieces and shape into rounds. Refrigerate covered with plastic (or freeze if making ahead). Do not refrigerate for more than 36 hours, since the yeast will over-ferment.

Frozen Lemon Verbena Mousse with Orange Blossom Honey and Crème Fraîche Cake

YIELD 10 PORTIONS

COMPONENTS

1 kg / 2 lb 3.27 oz LEMON VERBENA MOUSSE BASE (page 409)

10 CRÈME FRAÎCHE CAKE RECTANGLES

50 g / 1.76 oz orange blossom honey

5 g / .18 oz Madagascar vanilla powder

ASSEMBLY

1. Line 10 PVC tubes 18 cm / 7 in by 1.25 cm / .5 in diameter with acetate. Place the tubes on a sheet pan in a standing position and freeze.
2. Transfer the mousse base to a piping bag and fill the PVC tubes. Freeze.
3. Once frozen, remove the mousse from the tubes. Using a sharp knife, trim the odd ends off, then cut the frozen mousse (with the acetate still on) into 1.25-cm / .5-in pieces. There should be 13 pieces per tube. Reserve frozen in an airtight container.
4. Place the cake on the plate.
5. Remove the acetate from the mousse cylinders. Place 13 mousse cylinders on the cake in a standing position. Offset them so that they are at the far ends of the cake, to the left of center with one piece and then to the right with the next piece, and so on, until all the pieces of mousse are on the cake.
6. Torch the mousse for 2 to 3 seconds in order to evaporate any frozen condensation.
7. Drizzle 5 g / .18 oz of the honey on top of the mousse in thin strands.
8. Sprinkle .5 g / .02 oz of the vanilla powder evenly on the top of the mousse.
9. Temper for 2 to 3 minutes and serve.

Crème Fraîche Cake

YIELD 1 KG / 2 LB 3.27 OZ

184 g / 6.47 oz butter

160 g / 5.65 oz sugar

1.5 vanilla pods, split and scraped

5 g / .18 oz orange zest

136 g / 4.8 oz eggs, at room temperature

174 g / 6.14 oz all-purpose flour

10 g / .35 oz baking powder

5 g / .18 oz salt

327 g / 11.52 oz crème fraîche

100 g / 3.53 oz melted bitter chocolate

1. Preheat a convection oven to 160°C / 325°F.
2. Line a full-size sheet pan with a nonstick rubber mat and fit the inside of the pan with a frame .75 cm / .25 in by 53 cm / 21 in by 33 cm / 13 in.
3. Cream the butter, sugar, vanilla beans, and orange zest on medium speed using a paddle attachment for 6 minutes, or until soft and airy. Gradually add the eggs in 4 additions. Scrape the sides of the bowl after each addition of eggs.
4. Sift the dry ingredients together and add to the bowl, mixing on low speed until just incorporated.
5. Fold in the crème fraîche. Spread onto the prepared sheet pan, evening out the batter with the top of the frame. Remove the frame and bake until the cake springs back when touched and has a golden brown color, 10 to 12 minutes.
6. Cool to room temperature. Freeze for 2 hours before cutting, in order get a clean cut.
7. Place the frame back over the cake and even out the top by cutting it flush with the frame with a serrated knife.
8. Flip the cake over and spread the melted chocolate on it, thinly and evenly. Flip the cake back over and cut into rectangles 2.5 cm / 1 in by 16.25 cm / 6 in.
9. Reserve frozen in an airtight container under refrigeration. This can also be held frozen for about 2 months.

NOTE When zesting any citrus, zest over the bowl in which the ingredients are being mixed so that you get not only the zest, but also the oils from the fruit. The oils will be dispersed into the product, versus zesting on another surface and losing the oils.

For the entremet on page 303, follow the recipe through Step 8 and then cut the cake into two 14.5-cm / 6-in cakes.

ENTREMETS

Frozen Peanut Butter Bombes

YIELD 2 ENTREMETS

COMPONENTS

1.2 kg / 2 lb 10.33 oz PEANUT BUTTER ICE CREAM BASE (page 406)

800 g / 1 lb 12.22 oz MILK CHOCOLATE PARFAIT BASE (page 404)

400 g / 14.11 oz PEANUT CARAMEL

2 PEANUT DACQUOISE disks

1 kg / 2 lb 3.27 oz CARAMEL GLAZE (page 220)

200 g / 7.05 oz PEANUT BRITTLE

2 FRENCH MACARONS

ASSORTED CHOCOLATE GARNISHES

ASSEMBLY

1. Place 2 demi-sphere molds 15 cm / 6 in diameter, 2 demi-sphere molds 10 cm / 4 in diameter, and 2 demi-sphere molds 5 cm / 2 in diameter on a sheet pan in the freezer. Place the 2 larger molds on 7.5-cm / 3-in stainless steel rings to hold them up.
2. Churn the ice cream, extrude into a piping bag, and pipe it into the larger demi-sphere molds, filling them two-thirds of the way full. Place the 10-cm / 4-in demi-sphere molds into the larger molds, pressing down into the center of the ice cream. It will push the ice cream up. Stop pushing when both molds are at the same level. Even out the surface with an offset spatula.
3. Place in the freezer to harden.
4. Once the ice cream has hardened, pour warm water into the middle demi-sphere. Wait a few seconds, pour the water out, and remove the mold. Return the ice cream to the freezer.
5. Pipe the parfait into the ice cream's hole, filling it two-thirds of the way. Place the 5-cm / 2-in demi-sphere molds into the larger molds, pressing down the center of the parfait. It will push the parfait up. Stop pushing when this mold and the largest one are at the same level. Even out the surface with an offset spatula.
6. Place in the freezer to harden.
7. Once the parfait has hardened, pour warm water into the demi-sphere. Wait a few seconds, pour the water out, and remove the mold. Return to the freezer.
8. Pour the cooled peanut caramel into the parfait's hole all the way to the top. Even it out with the ice cream and parfait so they are all at the same level.
9. Place the peanut dacquoise on top and press down so it is even.
10. Freeze the entire bombe until hardened.
11. To unmold, place a 14.5-cm / 5.75-in cake board on the dacquoise. Dip the sphere in warm (not hot) water for 8 to 10 seconds. Make sure that the entire demi-sphere is submerged up to the rim, but also keep the water away from the surface so it doesn't wet any of the components. Remove the mold from the water, pat it dry with a paper towel, and gently push on one side of the cake board, while holding the mold with your other hand on the opposite side of where you are pushing, so that the mold turns as the bombe comes out (see page 106).

12. Place the unmolded bombe on a sheet pan. If the ice cream melted too much, it will have a wrinkled look. Smooth the surface with a warm small offset spatula.
13. Return to the freezer for 10 minutes.
14. Bring the caramel glaze to 19°C / 66°F.
15. Glaze the bombe on top of a sheet pan lined with parchment paper fitted with a wire rack. This may need to be glazed twice (glaze-freeze-glaze again).
16. Garnish the cake with the peanut brittle, macarons, and chocolate decorations.
17. Temper for 10 to 15 minutes before serving.

Peanut Caramel

YIELD 543 G / 1 LB 3.15 OZ

143 g / 5.05 oz sugar

43 g / 1.52 oz water

143 g / 5.05 oz heavy cream

214 g / 7.55 oz peanuts, lightly toasted and ground

1. Cook the sugar and water in a small pot over high heat until it becomes a medium-dark caramel, and reaches 178°C / 355°F. In the meantime, bring the cream to a simmer.
2. Once the caramel has reached the desired temperature, slowly whisk in the cream. Stir in the peanuts and continue to cook for a few more minutes.
3. Transfer to a stainless steel bowl and reserve at room temperature.

Peanut Dacquoise

YIELD 500 G / 1 LB 1.64 OZ

156 g / 5.5 oz confectioners' sugar

139 g / 4.9 oz peanut flour (see Note)

156 g / 5.5 oz egg whites

52 g / 1.83 oz granulated sugar

120 g / 4.23 oz milk chocolate, melted

1. Preheat a convection oven to 160°C / 325°F.
2. Line a half sheet pan with a nonstick rubber mat. Spray the borders with nonstick cooking spray. Place a 25 cm / 10 in by 38 cm / 15 in by 3-mm / .13-in Plexiglas frame on the nonstick rubber mat.

3. Sift together the confectioners' sugar and peanut flour. Make a French meringue with the egg whites and granulated sugar by whipping the egg whites at high speed. Once the egg whites have quadrupled in volume, pour the sugar in slowly down the side of the mixing bowl. Whip the meringue to medium-stiff peaks and fold it into the dry ingredients.
4. Spread onto the prepared sheet pan. Even out the batter with the top of the frame. Carefully remove the frame.
5. Bake until crispy and golden brown on the surface, about 6 minutes.
6. Cool to room temperature, then place in the freezer to harden.
7. Once frozen, flip the cake over onto a sheet of parchment paper. Cut it into two 14.5-cm / 5.75-in circles.
8. Pour a small amount (about 60 g / 2.12 oz) of melted milk chocolate on the smooth side of each cake. Spread into a very thin and even layer.
9. Reserve covered, frozen.

NOTE To make peanut flour, grind dry roasted, salted nuts until they are very fine. Sift the ground peanuts and discard any large particles left in the sifter.

Peanut Brittle

YIELD 500 G / 1 LB 1.64 OZ

132 g / 4.66 oz sugar

179 g / 6.31 oz light corn syrup

188 g / 6.63 oz roasted salted peanuts

2 g / .07 oz baking soda

1. Cook the sugar, corn syrup, and peanuts until the mixture starts to caramelize, around 325°F/160°C.
2. Add the baking soda, stirring quickly. Pour onto a nonstick rubber mat and spread out with an offset spatula until it is about 1 cm / .4 in thick.
3. After it cools, break apart into desired pieces (about 5 cm / 2 in). Reserve in an airtight container with silica gel packets to prevent the brittle from absorbing moisture.

NOTE Make sure to stir in the baking soda immediately after the brittle starts to caramelize, because it tends to burn quickly.

French Macarons

YIELD ABOUT 44 INDIVIDUAL PIECES (22 FINISHED MACARONS)

MACARONS

423 g / 14.92 oz confectioners' sugar

232 g / 8.18 oz almond flour

240 g / 8.47 oz egg whites

105 g / 3.7 oz granulated sugar

FILLING

200 g / 7.05 oz melted tempered dark chocolate (64%)

200 g / 7.05 oz peanut butter

1. **FOR THE MACARONS:** Mix the confectioners' sugar and almond flour together in a food processor and sift into a large bowl. Make a French meringue with the egg whites and granulated sugar by adding about 10 percent of the sugar at the start of the mixing process and whipping the egg whites at high speed. Once the egg whites have quadrupled in volume, pour the remaining sugar in slowly down the side of the mixing bowl. Whip the meringue to just under stiff peaks.
2. Fold the meringue into the dry ingredients, making sure that the batter has no lumps and is smooth but not runny. If under-mixed, the surface of the macarons will be lumpy. If overmixed, the macaron batter will run too much after piping and will not hold a round shape.
3. Line 2 sheet pans with silicone paper or a nonstick rubber mat. Using a #5 straight tip, pipe the batter into circles with a diameter of about 5 cm / 2 in. The batter should run slightly, just enough that the surface is smooth.
4. Let the macarons dry for at least 30 minutes uncovered and at room temperature. This is what gives them their characteristic look. While they dry, preheat a deck oven to 225°C / 440°F.
5. Bake in the back of the oven, where it is hottest, for about 6 minutes with the vent open. Pull to the front of the oven for 1 to 2 minutes longer to keep a close eye on the macarons, to make sure that the structure of the macarons sets. Make sure that the insides of the macarons are not too wet, otherwise they will fall and lose their volume after being removed from the oven. They also may be underbaked to the point where they do not lift off of the silicone paper.
6. Let the macarons cool completely on the sheet pan before removing and filling.
7. Reserve in an airtight container at room temperature.
8. **FOR THE FILLING AND ASSEMBLY:** Combine the chocolate and peanut butter in a bowl using a rubber spatula. Transfer to a piping bag.
9. Place 10 macarons facing up and pipe about 5 g / .18 oz of the filling on them. Place another macaron on top. Reserve in an airtight container at room temperature. If kept at room temperature, they can last for 2 days; if refrigerated, 5 days; if frozen, up to 1 month.

NOTE For Pistachio Macarons, add a couple of drops of green water-based food coloring to the egg whites in Step 1, just before they reach maximum volume. Whip for about 15 seconds after adding the coloring. For the filling, mix 150 g / 5.29 oz pistachio paste, 75 g / 2.65 oz marzipan, and 50 g / 1.76 oz sugar with a paddle attachment until combined, about 1 minute. Use the filling as directed in Step 9.

Grand Marnier Ice Cream, Chocolate Ice Cream, and Orange Crème Fraîche Cake

YIELD 2 ENTREMETS

COMPONENTS

1.5 kg / 3 lb 4.91 oz CHOCOLATE ICE CREAM BASE (page 364)

2.5 kg / 5 lb 8.18 oz GRAND MARNIER ICE CREAM BASE (page 376)

2 squares CRÈME FRAÎCHE CAKE (page 295)

100 g / 3.53 oz tempered dark chocolate (to garnish)

500 g / 1 lb 1.64 oz WHITE COUVERTURE SPRAY (page 188)

250 g / 8.82 oz DARK CHOCOLATE SPRAY (page 290)

100 g / 3.53 oz CANDIED ORANGE ZEST (page 130)

ASSEMBLY

1. Before churning or pacotizing the chocolate ice cream base, line 1 half sheet pan with a nonstick rubber mat and a 25 cm / 10 in by 38 cm / 15 in by 2-cm / .75-in stainless steel or Plexiglas frame. Line another half sheet pan with a nonstick rubber mat. Place both sheet pans in the freezer.
2. Line a cutting board with an acetate sheet and freeze.
3. Churn or pacotize the chocolate ice cream and pour it into the frozen pan with the frame. A 2-cm / .75-in-deep frame will hold a little over 1.75 L / 1.8 qt of liquid, but don't forget to take overrun into account. In this case, there should be an overrun of 50 percent. Using an offset spatula, spread the ice cream evenly so that it fits exactly into the frame, and remove any excess. Work fast to avoid any melting. Place the ice cream back in the freezer.
4. Once the ice cream has hardened, remove the Plexiglas frame by cutting around the inside border with a paring knife (be careful not to cut through the nonstick rubber mat). Flip the ice cream onto the acetate-lined cutting board and peel off the nonstick rubber mat. Cut two 12.5-cm / 5-in squares and transfer them to the other frozen sheet pan lined with the nonstick rubber mat. Freeze to harden, then cover with plastic wrap.
5. Place 2 square stainless steel molds 15 cm / 6 in by 5 cm / 2 in deep in the freezer on a sheet pan lined with a nonstick rubber mat.
6. Churn or pacotize the Grand Marnier ice cream and transfer it to a piping bag; reserve frozen until needed.
7. The entremets will be assembled upside down. Pipe the Grand Marnier ice cream into the frames set in the freezer. Make sure to get into the corners to avoid air pockets. Fill up to 1.75 cm / .68 in high, using half of the mixture for both frames. Use an offset spatula to even it out. Tap the sheet pan down gently to get any air pockets out. It's okay if some of the ice cream comes out the sides; it is a sign that there will be little, if any, air pockets.
8. Quickly place the chocolate ice cream squares on top of the Grand Marnier ice cream, making sure they are centered.
9. Pipe more Grand Marnier ice cream around the chocolate ice cream first, making sure to pipe into the corners and into the first layer of Grand Marnier ice cream (also, to prevent air pockets). Fill to just under .4 cm / ⅛ in from the top.
10. Place the crème fraîche cake at the center of the entremets and push down gently until the cake is flush with the rim of the frame.
11. Put a sheet of parchment paper on the cakes, and 4 sheet pans on top of the cakes to weigh them down and even them out. Freeze until hardened.
12. Place a square cake board on each of the cakes. It should be slightly smaller than the actual entremets. Make sure the cake board is thin, so it doesn't lift the cake up too high, which makes it look awkward.

13. Once hardened, flip the sheet pan over onto another sheet pan. Gently torch the cake molds and lift them up. Return the entremets to the freezer.
14. Set up the couverture and chocolate spraying area.
15. Place a sheet pan lined with parchment paper and fitted with a wire rack in the freezer.
16. Pour the tempered chocolate into a piping bag. Drizzle it on one side of the entremets.
17. Spray the entire cakes with the white couverture spray.
18. Spray dark chocolate spray on the opposite side where the chocolate was drizzled.
19. Place the candied orange zest in a thin straight line on the opposite side of the drizzled chocolate, from one side to the other of the cake.
20. Temper for 10 to 15 minutes before serving.

Crème Fraîche Ice Cream, Blackberry Sorbet, Pistachio Crème Brûlée, and Demerara Sugar Sponge Cake with Blackberry Glaze

YIELD 2 ENTREMETS

COMPONENTS

1 DEMERARA SUGAR SPONGE CAKE

2 rectangles FROZEN PISTACHIO CRÈME BRÛLÉE

1 L /1.04 qt BLACKBERRY SORBET BASE (page 388)

1 L /1.04 qt CRÈME FRAÎCHE ICE CREAM BASE (page 355)

500 g /1 lb 1.64 oz BLACKBERRY GLAZE

6 PISTACHIO MACARONS (page 300)

10 g / .35 oz toasted Sicilian pistachios

6 BLACKBERRY RAISINS

ASSEMBLY

1. Place a Plexiglas frame of the same external dimensions as the one used for the Demerara sponge on top of that frame. It should be .5 cm / .25 in deep.
2. Transfer the frozen crème brûlée into the frame on top of the sponge. Trim any excess from the top of the crème brûlée with a hot slicing knife so that it is flush with the top of the frame. Place another Plexiglas frame on top of the crème brûlée, of the exact dimensions throughout (width, length, and depth).
3. Place them in the freezer.
4. Churn or pacotize the blackberry sorbet and pour into the prepared frame. Even out the top so that it is flush with the frame. Freeze to harden. Place another frame of the same dimensions as the ones used for the blackberry sherbet on top. So far there should be 3 layers: sponge, brûlée, and blackberry sorbet, and there are 4 frames on the sheet pan.
5. Churn or pacotize the crème fraîche ice cream and pour into the prepared frame. Even out the top so that it is flush with the frame. Freeze to harden.
6. Once hardened, remove all of the frames from the cake by using a paring knife to cut around the inside border (make sure not to cut through the nonstick rubber mat).
7. Place a cutting board lined with an acetate sheet in the freezer.
8. Transfer the cake carefully to the lined cutting board. Freeze.
9. Cut 2 entremets from this cake using a long thin slicing knife. Have a hot water bath on hand to dip the knife into before each cut. Always dry the hot knife with a clean paper towel after dipping it in the water.
10. Trim one of the long borders of cake, then one of the short borders. Measure 17.5 cm / 7 in twice on the straight long border. Score the cake where the measures are with the tip of the knife.
11. Measure 10 cm / 4 in on the straight, short border twice. Score the cake where the measures are with the tip of the knife.
12. Using a knife, score the cake where it needs to be cut. Dip the knife and make the necessary cuts. There should be 2 rectangles 10 cm / 4 in by 17.5 cm / 7 in. Discard the trim and freeze the cutout cakes for 10 to 15 minutes.

13. Pour the glaze on the surface of both cakes. Only a small amount is needed, just enough to cover the surface. Be careful not to let the glaze trickle down the sides of the cake. Use a small offset spatula to push the glaze across the cake's surface.
14. Garnish each cake with 3 macarons, 5 g / .18 oz of toasted Sicilian pistachios, and 3 blackberry raisins.
15. Return to the freezer or temper for 10 to 15 minutes before serving.

Demerara Sugar Sponge Cake

YIELD 2 KG / 4 LB 6.55 OZ

372 g / 13.12 oz cake flour

171 g / 6.03 oz almond flour

28 g / 1 oz baking powder

428 g / 15.1 oz eggs

371 g / 13.09 oz Demerara sugar

285 g / 10.05 oz milk

343 g / 12.1 oz hazelnut oil

1. Preheat a convection oven to 160°C / 325°F.
2. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 1.75-cm / .68-in Plexiglas frame inside the sheet pan.
3. Sift the flours and baking powder together.
4. Whip the eggs and sugar together in the bowl of an electric mixer fitted with a whip attachment on medium-high speed until the mixture has quadrupled in size, about 5 minutes.
5. Slowly pour in the milk, whipping on medium speed.
6. Pour the dry ingredients into the bowl slowly while whipping on medium-low speed; make sure to scrape the bottom and sides to prevent flour pockets.
7. Pour in the oil in a thin stream.
8. Pour the batter into the prepared sheet pan; even out to the top of the frame and remove the frame.
9. Bake until golden brown, about 8 minutes.
10. Cool at room temperature.
11. Place the Plexiglas frame used to spread the batter on top of the baked sponge. Cut the excess from the sides of the sponge so that the frame sits on the nonstick rubber mat, not the sponge.
12. Cut the excess from the top of the sponge using a serrated knife flush with the frame (this cake cuts very well at room temperature). This is to get an even sheet of sponge.
13. Leave the sponge inside the frame to build the entremets on it. Reserve in an airtight container at room temperature. Discard after 3 days.

Frozen Pistachio Crème Brûlée

YIELD 1 KG / 2 LB 3.27 OZ

555 g / 19.58 oz heavy cream

185 g / 6.53 oz Sicilian pistachio paste

148 g / 5.22 oz sugar

2 g / .07 oz salt

111 g / 3.92 oz egg yolks

1. Combine the cream with the pistachio paste, sugar, and salt in a saucepan. Bring to a boil while whisking occasionally. Pass through a fine-mesh strainer and cool over an ice bath.
2. Once the liquid has cooled, pass the egg yolks through a fine-mesh strainer and combine with the pistachio-cream mixture.
3. Preheat a convection oven to 120°C / 250°F with the fan on low speed.
4. Place a sheet of acetate on a cutting board and freeze.
5. Line a flat half sheet pan with plastic wrap and drizzle some corn syrup on it, then cut out an acetate sheet so that it fits inside the sheet pan. Press down so that the acetate adheres to the plastic wrap. Place this sheet pan inside a large sheet pan and place them in the oven; pour the pistachio brûlée base inside the smaller sheet pan, then pour hot water into the larger sheet pan to fill it three-quarters of the way. Gently push both sheet pans into the oven.
6. Bake until the custard has a "gelatinous jiggle" when the sheet pan is gently tapped. Slide both sheet pans out halfway. Lift the smaller sheet pan out of the larger sheet pan and let the custard set at room temperature.
7. Once the brûlée has cooled, freeze it.
8. Once frozen, flip the brûlée onto a cutting board lined with acetate. Cut the borders of the brûlée so that it fits inside the frame with the sponge cake. Do not assemble yet. Return to the freezer until needed.

Blackberry Glaze

YIELD 700 G / 1 LB 8.69 OZ

500 g / 1 lb 1.64 oz neutral mirror glaze

200 g / 7.05 oz blackberry purée

1. Whisk together the neutral mirror glaze and blackberry purée until homogenous.
2. Reserve under refrigeration until needed. Discard after 4 days.

NOTE Be sure to taste the glaze to make sure it has enough blackberry flavor. Add more purée if necessary.

Blackberry Raisins

YIELD 6 TO 10 RAISINS

6 to 10 ripe blackberries

10 g / .35 oz pasteurized egg whites

100 g / 3.53 oz sugar

1. Dry the blackberries in a dehydrator or a very low oven (50°C / 122°F) until there is no moisture present, about 12 hours.
2. Brush the blackberries lightly with the egg whites, then coat with the sugar.
3. Let them dry at room temperature for at least 2 hours before using, or until the sugar has crusted onto the blackberry.
4. Reserve in an airtight container at room temperature. If they are kept in a dry environment, they can last for up to 1 week.

Macadamia Nut Ice Cream, Rum Ice Cream, Coconut Ice Cream, and Coconut Dacquoise

YIELD 2 ENTREMETS

COMPONENTS

1 kg / 2 lb 3.26 oz RUM ICE CREAM BASE (page 376)

1 L /1.04 qt COCONUT ICE CREAM BASE (page 365)

3 L /3.13 qt MACADAMIA NUT ICE CREAM BASE (page 364)

2 disks COCONUT DACQUOISE

16 COCONUT GIANDUJA PLAQUES

100 g / 3.53 oz melted coconut gianduja

2 PHYLLO SQUARES

2 pieces COCONUT GLASS (page 276)

10 g / .35 oz toasted macadamia nuts

10 g / .35 oz toasted desiccated coconut

ASSEMBLY

1. Place a nonstick rubber mat on a half sheet pan. Place 2 cake rings 2 cm / .75 in by 12.5 cm / 5 in diameter on the pan. Place 2 more cake rings of the same size on another nonstick rubber mat–lined half sheet pan. Place in the freezer.
2. Churn or pacotize the rum ice cream. Pour into a piping bag and pipe into 2 of the frozen cake rings all the way to the top. Even out the top with a large offset spatula. Place in the freezer to harden. This cake will be assembled upside down.
3. Repeat Step 2 with the coconut ice cream.

4. Place a nonstick rubber mat on a sheet pan. Place 2 cake rings 10 cm / 4 in by 15 cm / 6 in diameter on the pan. Freeze.
5. Using a blowtorch, gently remove the cake rings from the hardened ice cream disks. Reserve the disks frozen.
6. Churn or pacotize the macadamia nut ice cream. Pour into a piping bag and pipe into the frozen cake rings up to 2.5 cm / 1 in high. If necessary, pour the excess ice cream into another piping bag and freeze. Even out the surface with an offset spatula. Put the piping bag in the freezer.
7. Place a rum ice cream disk inside each one of the cake rings, making sure they are centered. Push the disk down so that the macadamia nut ice cream comes up the side of the disk.
8. Pipe another inch of macadamia nut ice cream and even out the surface with an offset spatula. Place a coconut ice cream disk inside each one of the cake rings, making sure they are centered. Push the disk down so that the macadamia nut ice cream comes up the side of the disk.
9. Pipe the remaining macadamia nut ice cream into the ring, almost all the way to the top. Discard any excess or reserve for another use.
10. Place the dacquoise disk inside the cake ring (centered) and push down until it is flush with the border of the cake ring. There will be some excess ice cream coming out the sides of the ring, which is actually a good thing because it means that the chance of having air pockets is minimal.
11. Even out the surface of the cake one last time. Cover the cakes with plastic wrap or parchment paper and place 4 half sheet pans on top of them (to weigh down and ensure an even shape). Freeze to harden.
12. Once hardened, place a thin cake board on the dacquoise. Flip the cake over and remove the cake rings using a torch. Return the cakes to the freezer.
13. Garnish the entremets one at a time. Place 8 plaques of coconut gianduja symmetrically around the side of the entremet, using some of the melted coconut gianduja to adhere the plaques to the cake. Place a phyllo square in a standing position on the cake. Place the coconut glass next to it. Place 5 g / .18 oz of toasted macadamia nut halves between the phyllo and the coconut glass. Place about 5 g / .18 of the toasted coconut on the cake in a thin straight line across the top, in front of the phyllo, glass, and macadamia nuts.
14. Return to the freezer or temper for 10 to 15 minutes before serving.

NOTE Neither the phyllo, the coconut glass, nor the toasted macadamia nuts will last very long in the freezer (about 2 hours maximum) before they start losing their crunch. Garnish the entremets right before they are presented, if possible. If this cake is in a display case, keep it there, and the cakes that are sold can be garnished before they are served or packaged to take away.

Coconut Dacquoise

YIELD 500 G / 1 LB 1.64 OZ

155 g / 5.48 oz confectioners' sugar

139 g / 4.9 oz desiccated coconut

155 g / 5.48 oz egg whites

52 g / 1.83 oz granulated sugar

100 g / 3.53 oz white chocolate, melted

1. Preheat a convection oven to 160°C / 325°F.

2. Place a nonstick rubber mat on a half sheet pan. Place a 25 cm / 10 in by 38 cm / 15 in by .5-cm / .25-in Plexiglas frame on top of the nonstick rubber mat.
3. Sift the confectioners' sugar and the desiccated coconut with a drum sieve.
4. Make a French meringue with the egg whites and granulated sugar by adding about 10 percent of the sugar at the start of the mixing process and whipping the egg whites at high speed. Once the egg whites have quadrupled in volume, pour the remaining sugar in slowly down the side of the mixing bowl. Whip the meringue to just under stiff peaks.
5. Fold the meringue into the dry ingredients.
6. Pour into the prepared frame and even out the batter using an offset spatula so that the batter is flush with the frame. Remove the frame.
7. Bake until golden brown and crispy on the surface, about 6 minutes.
8. Cool to room temperature, and then freeze.
9. Flip the dacquoise over and spread it with a thin, even layer of white chocolate. Let it set.
10. Place the frame used earlier evenly on top of the cake. Trim the borders of the cake so that the cake is inside the frame, not under it. Trim the top of the cake using a serrated knife so that it is flush with the frame.
11. Cut the cake into two 14.5-cm / 5.75-in rings. Reserve frozen until needed.

Coconut Gianduja Plaques

YIELD 250 G / 8.82 OZ

250 g / 8.82 oz coconut gianduja, melted

1. Pour the melted coconut gianduja on an acetate sheet set on a marble surface. Spread as thinly as possible.
2. When it begins to set, cut into 5-cm / 2-in squares (plaques).
3. Flip the acetate sheet on top of a parchment paper–lined sheet pan so that the gianduja is facing the parchment paper.
4. Stack 5 sheet pans or a heavy cutting board on top of the acetate to prevent the gianduja from bowing when it sets.
5. Reserve under refrigeration until needed. It can keep for up to 3 months or more in refrigeration.

Phyllo Squares

YIELD ABOUT 15 SQUARES

3 phyllo dough sheets (25 cm / 10 in by 38 cm / 15 in)

200 g / 7.05 oz clarified butter, melted but cool

200 g / 7.05 oz sugar

1. Preheat a convection oven to 160°C / 325°F.
2. Place 1 sheet of phyllo dough on a cutting board. Brush with some of the butter and sprinkle with some of the sugar. Cover with another layer of phyllo dough and repeat until there is a total of 3 layers. Cut into 7.5-cm / 3-in squares.
3. Line a half sheet pan with a nonstick rubber mat. Place the phyllo squares on the mat and bake until golden brown, about 7 minutes.
4. Once cooled, reserve in an airtight container at room temperature. Discard after 2 days.

Gianduja Gelato, Frozen Tangerine Soufflé, and Hazelnut Financier Cake

YIELD 2 ENTREMETS

COMPONENTS

1.5 kg / 3 lb 4.9 oz FROZEN TANGERINE SOUFFLÉ BASE (page 407)

3 kg / 6 lb 9.8 oz GIANDUJA GELATO BASE (page 368)

2 disks HAZELNUT FINANCIER

500 g / 1 lb 1.64 oz GIANDUJA SPRAY

100 g / 3.53 oz DARK CHOCOLATE GLAZE (page 200)

2 GIANDUJA RINGS

ASSORTED CHOCOLATE GARNISHES

ASSEMBLY

1. Line 2 PVC tubes or stainless steel rings 11.25 cm / 4.5 in by 5 cm / 2 in diameter with acetate. Place them on a sheet pan and freeze.
2. Pipe the soufflé base into the prepared PVC tubes. Even out the top with an offset spatula. Place in the freezer to harden.
3. Line 2 PVC tubes or stainless steel rings 15 cm / 6 in by 10 cm / 4 in diameter with acetate. Place them on a sheet pan lined with a nonstick rubber mat. Place an inverted 3.75-cm / 1.5-in stainless steel demi-sphere mold at the left-center of the base of each PVC tube.
4. Take the tangerine soufflé out of the PVC tube.
5. Churn or pacotize the gianduja gelato. Pour into 2 piping bags. Freeze 1 piping bag.
6. Fill the PVC tubes with the gelato up to 3 cm / 1.2 in. Take the acetate off of the frozen tangerine soufflé and place inside the larger PVC tube. Push it down so that the soufflé touches the demi-sphere mold and the gelato comes up the sides of the soufflé 1.75 cm / .5 in. Pipe the gelato around the soufflé (make sure to pipe into the gelato and not on top of it, to prevent air pockets) almost all the way to the top (leave 3 mm / .13 in). The gelato will surround the soufflé completely.
7. Place the financier disk at the center of the ring and push down so that it is level with the border of the ring. Even out with an offset spatula.
8. Put plastic wrap or a sheet of parchment paper on top of the PVC tubes. Stack 5 half sheet pans on top of the tubes (to ensure an even shape) and freeze to harden.
9. Place a parchment paper–lined sheet pan fitted with a wire rack in the freezer.
10. Flip the tubes onto a thin cake board and take the PVC tubes off. Transfer to the frozen wire rack in the sheet pan. Pour a small amount of warm water into the demi-spheres. Gently slide them off in a circular motion. Freeze.
11. Set up the spray area.
12. Spray the entremets in an even coat with the gianduja spray.
13. Return to the freezer.
14. Bring the chocolate glaze to 37°C / 100°F. Pour it into the space left by the demi-sphere mold. Make sure it domes above the surface of the entremets.
15. Place the gianduja ring in the glaze (one-third of it will be submerged) in a standing position.

16. Place the other chocolate garnishes on the cake.
17. Reserve frozen and let it temper for 10 to 15 minutes before serving.

Hazelnut Financier

YIELD 500 G / 1 LB 1.64 OZ

61 g / 2.15 oz blanched hazelnut flour

61 g / 2.15 oz all-purpose flour

144 g / 5.08 oz confectioners' sugar

132 g / 4.66 oz egg whites

103 g / 3.63 oz brown butter, cooled to room temperature

100 g / 3.53 oz melted gianduja

1. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by 5 cm / .25 in Plexiglas frame inside the sheet pan.
2. Preheat a convection oven to 160°C / 325°F.
3. Combine the flours and confectioners' sugar in the bowl of an electric mixer using the paddle. Add the egg whites in 4 additions, scraping the bowl in between each addition. Mix until combined. Scrape down the sides of the bowl. Slowly add the melted butter until incorporated.
4. Pour the batter into the prepared frame and even out with the frame using an offset spatula. Take the frame off and wash.
5. Bake until firm to the touch at the center of the financier, about 6 minutes.
6. Take out of the oven and cool to room temperature.
7. Once it has cooled, place the clean frame on top of the financier and trim the borders so that the financier is inside the frame, not under it. Using a serrated knife, trim the crown of the financier so it is even with the frame.
8. Take the frame off and freeze for 1 hour. Flip the financier over onto a sheet of parchment paper and spread about 100 g / 3.53 oz of melted gianduja on it. Spread in a thin, even layer, then cut into two 8.75-cm / 3.5-in disks.
9. Reserve frozen until needed. If properly wrapped, it can last for up to 1 month.

Gianduja Spray

YIELD 500 G / 1 LB 1.64 OZ

300 g / 10.58 gianduja, finely chopped

200 g / 7.05 oz cocoa butter

1. Bring the gianduja and cocoa butter to 38°C / 100°F.
2. Pass through a fine-mesh strainer and reserve at the above temperature.

Gianduja Rings

YIELD 20 G / .71 OZ

20 g / .71 oz gianduja, tempered

1. Spread the melted gianduja onto 2 acetate strips .5 cm / .25 in by 12.5 cm / 5 in.
2. Let it set halfway, then wrap the strips around a 5-cm / 2-in diameter PVC tube. Let them set on the tube.
3. Once set, take the acetate off.
4. Reserve at room temperature in an airtight container. If these garnishes are left in a cool, dry environment, they will last for over 1 year, but that doesn't necessarily mean they should be made a year ahead or made in a quantity that will last you a year.

Sicilian Pistachio Gelato, Cherry Sorbet, Vanilla Semifreddo, and Pistachio Génoise

YIELD 2 ENTREMETS

COMPONENTS

300 g / 10.58 oz CHERRY SORBET BASE (page 388)

300 g / 10.58 oz VANILLA SEMIFREDDO BASE (page 405)

2.5 kg / 5 lb 8.18 oz SICILIAN PISTACHIO GELATO BASE (page 368)

2 squares PISTACHIO GÉNOISE

500 g / 1 lb 1.64 oz WHITE COUVERTURE SPRAY (page 188), warmed to 43° C / 110° F

10 g / .35 oz CHERRY GLAZE

10 g / .35 oz PISTACHIO DUST (page 227)

2 SQUARE CHOCOLATE PLAQUES

ASSEMBLY

1. Place two 3.75-cm / 1.5-in stainless steel cubes on a sheet pan lined with a nonstick rubber mat in the freezer.
2. Churn or pacotize the cherry sorbet base and pour into a piping bag.
3. Pipe into the cubes, making sure to get in the corners. Pipe into the sorbet, not on top of it, to prevent air pocket formation.
4. Even out the top with an offset spatula and freeze to harden.
5. Once hardened, use a torch to gently remove the stainless steel cubes from the sorbet. Return to the freezer. Once hardened throughout, cover with plastic wrap.
6. Repeat steps 1 through 5 with the vanilla semifreddo base.
7. Place two 10-cm / 4-in stainless steel cubes on a sheet pan lined with parchment paper in a freezer. These entremets will be assembled upside down.
8. Churn or pacotize the pistachio gelato. Pour into 2 piping bags and reserve frozen.
9. Pipe 2.5 cm / 1 in of pistachio gelato into the cubes. Make sure to get into the corners and pipe with the piping bag tip into the gelato, and not on it, to avoid air pockets. Even out the tops with an offset spatula. Place the piping bag in a freezer.
10. Place the cherry sorbet cube in the gelato cube. Make sure it is centered. Push it down on the gelato about .5 cm / .25 in.
11. Pipe gelato around the cherry sorbet cube and on top of it, about .5 cm / .25 in so that the sorbet is completely enclosed by the gelato.
12. Place the vanilla semifreddo cube on the gelato. Make sure it is centered and push it in slightly. Pipe gelato to the top of the cube. Always keep in mind to pipe into the gelato and not on top of it.
13. Place the génoise square on the gelato. Make sure it is centered. Push it down so that it is level with the top of the cube. Repeat with the remaining gelato, frozen cubes, and génoise.
14. Put plastic wrap or a sheet of parchment paper on top of the cubes.
15. Stack 5 sheet pans on the cubes to weigh them down and ensure an even shape. Freeze to harden.
16. Place a sheet pan lined with parchment paper and fitted with a wire rack in the freezer.
17. Place a thin square cake board on the génoise. Flip the cubes over.

18. Torch the cubes for a few seconds and carefully remove them from the frames.
19. Transfer the cubes to the frozen wire rack and freeze again.
20. Set up the spraying area and spray gun.
21. Spray the cakes evenly with the white couverture spray.
22. Place a 6.25 cm / 2.5 in ring on the bottom left corner of the top of the cake. Pour in the cherry glaze. Take the ring off.
23. Sprinkle pistachio dust in a straight line across the center of the glaze.
24. Place a square chocolate plaque on the top right corner of each cake.
25. Reserve refrigerated or let it temper for 10 to 15 minutes before serving.

NOTES Garnish this entremet at the last minute, since the compote garnish won't be very palatable if it is frozen hard, the pistachio dust will absorb moisture from the freezer, and the glaze will turn dull.

It is okay to have one finished as a display, but for those that will be served or packaged, they should be garnished right before serving.

Pistachio Génoise

YIELD 500 G / 1 LB 1.64 OZ

83 g / 2.93 oz almond paste

21 g / .74 oz pistachio paste

94 g / 3.31 oz confectioners' sugar

63 g / 2.2 oz egg yolks

31 g / 1.09 oz eggs

104 g / 3.67 oz egg whites

10 g / .35 oz granulated sugar

73 g / 2.57 oz all-purpose flour

21 g / .74 oz clarified butter, melted but cool

100 g / 3.53 oz white chocolate, melted

1. Line a half sheet pan with a nonstick rubber mat. Place a 25 cm / 10 in by 38 cm / 15 in by .5-cm / .25-in Plexiglas frame on top of the mat.
2. Preheat a convection oven to 160°C / 325°F.
3. Combine the nut pastes and confectioners' sugar in the bowl of an electric mixer using a paddle attachment. Gradually add the egg yolks and eggs in 4 additions, scraping the bowl between additions.
4. Make a French meringue with the egg whites and granulated sugar by adding about 10 percent of the sugar at the start of the mixing process and whipping the egg whites at high speed. Once the egg whites have quadrupled in volume, pour the remaining sugar in slowly down the side of the mixing bowl. Whip the meringue to medium-stiff peaks. Fold into the nut paste mixture in 2 additions. Fold in the flour.
5. Pour in the clarified butter in a stream as the mixer runs on low speed.

6. Spread into the prepared sheet pan and bake until the cake springs back to the touch, about 7 minutes. Cool to room temperature.
7. Place the previously used frame on the cooled sponge. Trim its borders so the sponge is inside the frame, not underneath it.
8. Freeze the sponge to harden.
9. Once it has hardened, flip the cake over and peel off the nonstick rubber mat.
10. Spread an even, thin layer of melted chocolate on the sponge with an offset spatula.
11. Flip the cake back over. Cut out 9-cm / 3.5-in squares. Reserve frozen and covered in an airtight container.

NOTE When combining something very dense like nut paste and something very light such as meringue, stir a small portion of the meringue into the nut paste mixture, but do not worry about deflating the meringue. The purpose is to try to lighten up the nut paste mixture. If the meringue is added all at once, it will be deflated even more than if a small amount is added at the beginning.

Cherry Glaze

YIELD 240 G / 8.46 OZ

200 g / 7.05 oz neutral mirror glaze
40 g / 1.41 oz cherry purée

Whisk together the neutral mirror glaze and the cherry purée until a homogenous mass is achieved.

NOTE Be sure to taste the glaze to make sure it has enough cherry flavor. Add more purée if necessary.

Caramel and Banana Ice Cream Entremet

YIELD 2 ENTREMETS

COMPONENTS

3 kg / 6 lb 9.82 oz CARAMEL ICE CREAM (see Note)

1 kg /2 lb 3.27 oz BANANA ICE CREAM (see Note)

2 BANANA BREAD RECTANGLES

200 g / 7.05 l oz elderflower syrup

500 g / 1 lb 1 .64 oz WHITE COUVERTURE SPRAY (page 188), warmed to 43° C / 110° F

100 g / 3.53 oz melted dark chocolate

ASSEMBLY

1. Line two 30 cm / 12 in by 2.5-cm / 1-in diameter PVC tubes with acetate. Place the tubes on a sheet pan in the freezer.
2. Churn or pacotize the banana ice cream, pour into a piping bag and pipe into the prepared tubes. Smooth out the top of the tubes with an offset spatula. Place in the freezer to harden.
3. Once hardened, remove the frozen banana ice cream from the tubes and reserve frozen with the acetate on.
4. Line two 30 cm / 12 in by 6.25 cm / 2.5 in diameter PVC tubes with acetate. Place the tubes on a sheet pan lined with a nonstick rubber mat in a standing position in the freezer.
5. Churn or pacotize the caramel ice cream, pour into a piping bag and pipe into the prepared tubes three-quarters up. Take the acetate off the hardened banana ice cream inserts and insert into the soft caramel ice cream. Make sure that the insert is centered. Smooth out the top of the PVC tube with an offset spatula. Freeze to harden in a standing position and reserve until needed.
6. Place the banana bread rectangles on a 30 cm / 12 in long by 5-cm- / 2-in-wide Plexiglas.
7. Soak each cake with 100 g / 3.53 oz elderflower syrup.
8. Reserve refrigerated until needed.

8. Place a half sheet pan lined with parchment paper in a freezer.
9. Cut the frozen caramel ice cream and banana tube in four 2-in-wide pieces. Cut one 4-in-piece. Cut the 4-in-piece on the diagonal. Cut one of the 2-in pieces in half. Leave the acetate on the ice cream while cutting it. Re-freeze the cut pieces with the acetate still on.
10. Prepare a spraying area and bring the white chocolate spray to 37°C / 100°F.
11. Fill a compressor with the melted white chocolate spray.
12. Take the acetate off the cut pieces of ice cream and spray to coat completely.
13. Return to the freezer for 10 minutes.
14. Place the sprayed pieces of ice cream on the banana bread in a line. Return to the freezer.

11. Fill a cornet with melted dark chocolate. Pipe the desired design on the cake.
12. Reserve frozen in an airtight container until needed.
13. Temper 10 to 15 minutes before serving.

NOTES For the caramel ice cream: Make the caramel ice cream following the instructions for the Burnt Sugar Ice Cream (page 355), but cook the sugar to 160°C / 320°F.

For the banana ice cream: Make the banana ice cream following the instructions for the Caramelized Ice Cream (page 352), but use raw bananas instead of caramelized bananas.

Banana Bread Rectangles

YIELD 1.05 KG / 2 LB 5.04 OZ

255 g / 9 oz sugar

68 g / 2.4 oz eggs

79 g / 2.8 oz vegetable oil

386 g / 13.6 oz banana purée

255 g / 9 oz pastry flour

4 g / .15 oz baking soda

.5 g / .02 oz baking powder

1 g / .04 oz salt

1. Grease a 33 cm / 13 in x 7.5 cm / 3 in stainless steel rectangle mold. Place on a half sheet pan lined with a nonstick rubber mat.
2. Preheat a convection oven to 160°C / 325°F.
3. Mix sugar, eggs, and oil until homogenous, about two minutes. Mix in the puréed bananas.
4. Sift all of the dry ingredients. Add to the liquid mixture and mix until a homogenous mass is obtained.
5. Pour into the prepared mold.
6. Bake until the sponge is dry at the center of the loaf and it springs back when gentle pressure is applied, about 7 minutes.
7. Cool to room temperature in the mold.
8. Cut into a 30 cm / 12 in by 5 cm / 2 in by 1.75-cm / .68-in cake. Reserve refrigerated until needed. Freeze if not using the day it was made.

SAVORY DESSERTS

Extra-Virgin Olive Oil Sorbet with Black Olive Powder, Red Onion Marmalade, and Tomato Jelly

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz TOMATO JELLY

20 g / .71 oz RED ONION MARMALADE

5 g / .18 g BLACK OLIVE POWDER

30 g / 1.06 oz Coach Farms goat's milk cheese

2 g / .07 oz freshly cracked pepper

5 g / .18 oz extra-virgin olive oil

200 g / 7.05 g EXTRA-VIRGIN OLIVE OIL SORBET (page 395)

ASSEMBLY

1. Slice the tomato jelly into 2-mm- / .08-in-thick pieces. This should always be done to order; if it is done too far ahead the jelly will dry out. Place a rectangle of tomato jelly on the plate.
2. Place about 2 g / .07 oz of marmalade next to the tomato jelly in a tall and tight mound.
3. Sprinkle a pinch of black olive powder on the opposite side of the onion marmalade, directly on top of the tomato jelly.
4. Pry a small piece (about 3 g / .11 oz) off of the goat cheese; this will give it a crumbled look. Place next to the black olive powder, leaning on the tomato jelly.
5. Sprinkle a pinch of pepper on top of the goat cheese.
6. Using an eyedropper, pour a few drops of olive oil on the plate.
7. Scoop a small quenelle (20 g / .71 oz) of the sorbet on top of the tomato jelly and serve immediately.

Tomato Jelly

YIELD 500 G / 1 LB 1.64 OZ

TOMATO WATER

5 kg / 11 lb .37 oz beefsteak tomatoes

50 g / 1.76 oz salt

JELLY

491 g / 1 lb 1.31 oz Tomato Water

1.9 g / .07 oz agar-agar

7 g / .25 oz salt, or as needed

1. **FOR THE TOMATO WATER:** Blend the ripe beefsteak tomatoes with the salt until puréed, about 2 minutes. Place the puréed tomatoes in a large fine-mesh strainer set over a stainless steel bowl or bain marie and let gravity extract the water from the tomatoes overnight.
2. Place a 12.5 cm / 5 in square by 1.75 cm / .5 in mold on an acetate sheet on a flat surface such as a sheet pan or a sheet of Plexiglas.
3. **FOR THE TOMATO JELLY:** Over medium heat, boil 99 g / 3.49 oz of the tomato water with the agar-agar and salt. Combine with rest of the liquid off the heat. Pour into the prepared mold. It may seep, so it is a good idea to seal the mold by piping melted chocolate around it and letting it set before pouring in the jelly. Let the jelly set in the refrigerator.
4. Take the chocolate off the tomato jelly mold with a paring knife. Wipe the surrounding surface clean of any chocolate so none of it combines with the jelly.
5. Reserve chilled and covered in plastic wrap. Discard after 2 days.

Red Onion Marmalade

YIELD 705 G / 1 LB 8.70 OZ

488 g / 1 lb 1.21 oz red onions, thinly sliced

175 g / 6.17 oz sugar

38 g / 1.34 oz white wine vinegar

3 g / .11 oz salt, or as needed

1 g / .035 ground cubeb pepper, or as needed

1. In a sauté pan, combine all of the ingredients and cook over low heat until caramelized, stirring occasionally, about fifteen minutes.
2. Reserve under refrigeration until needed. Discard after 1 week.

Black Olive Powder

YIELD 50 G / 1.76 OZ

200 g / 7.05 oz Gaeta olives, pitted

Place the olives in a dehydrator set to 57°C / 135°F until dry. Grind in a spice grinder. Store in an airtight container at room temperature.

NOTE Use any variety of black olives, if desired.

White Chocolate Ice Cream Cones with Osetra Caviar

YIELD 10 PORTIONS

COMPONENTS

10 PLAIN CONES (page 158)

200 g / 7.05 oz WHITE CHOCOLATE ICE CREAM (page 365)

50 g / 1.76 oz Osetra caviar

ASSEMBLY

1. Place a cone in a stand.
2. Place a small scoop of ice cream, or pipe the ice cream (20 g / .71 g), in the cone.
3. Place a 5-g / .18-oz rounded spoonful of caviar on top of the ice cream and serve immediately.

NOTE This flavor combination was inspired by Heston Blumenthal of the Fat Duck restaurant, near London.

Quince Sorbet with Manchego Crisps and Serrano Ham Jerky

YIELD 10 PORTIONS

COMPONENTS

500 g / 1 lb 1.64 oz QUINCE SORBET BASE (page 379)

10 MANCHEGO CRISPS

10 FRIED SAGE LEAVES

10 pieces SERRANO HAM JERKY

ASSEMBLY

1. Line 5 PVC tubes 7.5 cm / 3 in by 5 cm / 2 in diameter with acetate. Place them on a sheet pan and reserve frozen.
2. Churn or pacotize the sorbet; transfer to a piping bag and pipe into the prepared PVC tubes. Even out the top of the tubes with an offset spatula. Place in the freezer to harden.
3. Once hardened, remove the sorbet from the tubes and cut them diagonally to obtain 2 equal-sized pieces. Do not take the acetate off.
4. Reserve frozen in an airtight container until needed.
5. Place a manchego crisp on the plate.
6. Take the acetate off one of the quince sorbets and place on top of the manchego crisp.
7. Lean a fried sage leaf on the sorbet and serve immediately.
8. Lean a piece of jerky on the sorbet.

Manchego Crisps

YIELD 175 G / 6.17 OZ

200 g / 7.05 oz manchego

1. Preheat a convection oven to 160°C / 325°F.
2. Line a sheet pan with a nonstick rubber mat. Thinly slice the cheese and cut into 5-cm / 2-in squares.
3. Place on sheet pan and bake until golden brown, about 8 minutes. Cool to room temperature.
4. Reserve in an airtight container at room temperature. Discard after 2 days (refresh in a hot oven on the second day).

Fried Sage Leaves

YIELD 10 LEAVES

200 g / 7.05 oz canola oil

10 sage leaves

1 g / .04 oz salt

1. Preheat the canola oil to 190°C / 375°F.
2. Fry the leaves until crisp, about 5 seconds.
3. Transfer to a sheet pan lined with a paper towel.
4. Season with salt.
5. Reserve in an airtight container at room temperature. Discard leftovers after service.

Serrano Ham Jerky

YIELD 375 G / 13.23 OZ

500 g / 1 lb 1.64 oz Serrano ham

1. Thinly slice the ham on a meat slicer.
2. Place in a dehydrator at 135°F/57°C until dry, about 5 hours.
3. Reserve in an airtight container at room temperature. Discard after 4 days.

Piquillo Pepper Sorbet with Parsley Oil and Saffron Cream

YIELD 10 PORTIONS

COMPONENTS

10 BAGUETTE DISKS

200 g / 7.05 oz SAFFRON CREAM

75 g / 2.65 oz PARSLEY OIL

300 g / 10.58 oz PIQUILLO PEPPER SORBET (page 383)

10 saffron strands

10 Bull's Blood leaves

ASSEMBLY

1. Place a baguette disk in a bowl or plate.
2. Spoon 20 g / .71 oz of saffron cream at the center of the bowl.
3. Spoon a few drops of parsley oil on the saffron cream.
4. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet on top of the baguette disk.
5. Place a strand of saffron on the saffron cream. Lean a Bull's Blood leaf on the sorbet and serve immediately.

NOTE Bull's Blood is a variety of micro-green herb. Other micro greens can be substituted.

Baguette Disks

YIELD 20 G / .71 OZ

100 g / 3.53 oz baguette

1. Trim the crust off the baguette. Cut into 2-mm- / .08-in-thick slices.
2. Cut disks out of the slices using a 2.5-cm / 1-in ring cutter,.
3. Reserve in an airtight container at room temperature. Discard after 3 days (check daily and refresh in a hot oven).

NOTE The baguette is used to anchor the sorbet; any other bread will do, as long as it is fresh.

Saffron Cream

YIELD 250 G / 8.82 OZ

250 g / 8.82 oz heavy cream

.5 g / .02 oz saffron

3 g / .1 oz salt, or as needed

1. Bring the cream to a boil with the saffron. Season with salt to taste.
2. Steep covered for 30 minutes, stirring occasionally. Adjust the seasoning if necessary.
3. Chill over an ice bath and refrigerate until the cream is cold. Reserve under refrigeration. Discard after 2 days.

Parsley Oil

YIELD 350 G / 12.35 OZ

300 g / 10.58 oz parsley (leaves only)

75 g / 2.65 oz extra-virgin olive oil, or as needed

1. Bring a large pot of water to a rolling boil. Add 100 g / 3.53 oz of salt for every liter of water.
2. Blanch the parsley leaves for 10 seconds, stirring them gently so that they get evenly blanched; they will all look wilted once they are blanched.
3. Shock the leaves in an ice bath, stirring so that they chill quickly.
4. Strain the leaves out of the ice bath. Squeeze the excess water off with your hands and pat dry with paper towels.
5. Place half of the leaves in a blender with the oil. The oil should cover the leaves. Add more oil if necessary.
6. Blend on medium speed for about 1 minute, or until smooth, then add the remaining parsley and blend for 1 more minute. If the parsley is not blending properly, add a little more oil.
7. Once a smooth purée has been obtained, remove from the blender cup and let the purée sit in a fine-mesh strainer lined with cheesecloth for 2 hours. Refrigerate the resulting oil. Discard after 2 days.

Green Zebra Tomato Sorbet with Fromage Blanc, Argan Oil, Garlic Chip, Cracked Tellicherry Pepper, Gray Sea Salt, and Basil

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz fromage blanc

10 g / .35 oz argan oil

3 g / .11 g Tellicherry peppercorns

3 g / .11 g gray sea salt

300 g / 10.58 oz GREEN ZEBRA TOMATO SORBET (page 382)

10 GARLIC CHIPS

2 basil leaves, cut into a fine chiffonade

ASSEMBLY

1. Scoop a small dollop of fromage blanc (about 10 g / .35 oz) into a bowl.
2. Drizzle 1 g / .04 oz of argan oil on top of the fromage blanc and drizzle a few drops on the bowl.
3. Crack the pepper directly on top of the cheese (turn the pepper mill twice).
4. Sprinkle a pinch (3 to 5 grains) of sea salt on top of the cheese.
5. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet next to the cheese. Place a garlic chip on top of the sorbet.
6. Place 3 strands of basil chiffonade on top of the garlic chip and serve immediately.

Garlic Chips

YIELD 65 G / 2.3 OZ

100 g / 3.53 oz garlic cloves, peeled and very thinly sliced

4 g / .14 oz olive oil

2 g / .07 oz salt

1. Preheat a convection oven to 93°C / 200°F.
2. Line a sheet pan with a nonstick rubber mat.
3. Brush the garlic slices with olive oil and sprinkle salt on top.
4. Place another nonstick rubber mat on top. Bake in the oven until dry, about 20 minutes.
5. Reserve in an airtight container at room temperature.

NOTE These chips can also be made in a dehydrator set to 57°C / 135°F.

Cucumber and Wasabi Sorbet with Smoked Salmon, Crème Fraîche, Chives, and Salmon Roe

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz CUCUMBER AND WASABI SORBET BASE (page 384)

100 g / 3.53 oz thinly sliced smoked salmon

75 g / 2.65 oz crème fraîche

5 g / .18 oz salmon roe (or 4 eggs per serving)

2 chives cut into 2.5-cm- / 1-in-long pieces

ASSEMBLY

1. Place a fleximold mat of 2.5 cm / 1 in by 3.75 cm / 1.5 in by .75-cm / .25-in rectangles on a sheet pan in the freezer. These mats typically have 15 rectangles in them.
2. Churn or pacotize the sorbet; transfer it to a piping bag and pipe into the frozen fleximold. Even out the surface with an offset spatula. Place in the freezer to harden.
3. Once hardened, take the sorbet rectangles off the mat. Reserve frozen in an airtight container until needed.
4. Place a thin slice of smoked salmon on a plate, making sure it is flat.
5. Place a rectangle of sorbet on top of the salmon, and fold one end on top of the sorbet.
6. Spoon about 2 g / .07 oz of crème fraîche toward the bottom of the sliced salmon.
7. Spoon 4 salmon eggs on top of the sorbet.
8. Place 3 pieces of chives on top of the roe and serve immediately.

NOTE Since this sorbet contains very little sugar, it tends to melt fast. Work quickly when plating and serving.

Red Beet Sorbet with Parsley Purée and Extra-Virgin Olive Oil

YIELD 10 PORTIONS

COMPONENTS

300 g /10.58 oz RED BEET SORBET BASE (page 383)

150 g / 5.29 oz PARSLEY PURÉE

40 g / 1.41 oz extra-virgin olive oil

ASSEMBLY

1. Churn or pacotize the sorbet base. Transfer to a piping bag and portion into a 3.75-cm / 1.5-in diameter demi-sphere fleximold mat. The mat should contain at least 20 demi-spheres.Place in the freezer to harden.
2. Once hardened, fuse 2 sorbet demi-spheres together by rubbing the ends where they touch with your gloved fingers.
3. Return to the freezer. Once hardened, transfer to an airtight container and reserve frozen.
4. Spoon 15 g / .53 oz of parsley purée into a small bowl.
5. Place a sorbet sphere directly on top of the parsley purée.
6. Using an eyedropper, pour a few drops of olive oil around the parsley purée and serve immediately.

Parsley Purée

YIELD 200 G / 7.05 OZ

240 g / 8.47 oz parsley leaves

60 g / 2.17 oz extra-virgin olive oil

1 g / .04 oz xanthan gum

1. Bring a large pot with water to a rolling boil. Add 100 g / 3.53 oz of salt for every liter of water.
2. Blanch the parsley leaves for 10 seconds, stirring them gently so that they all get evenly blanched; the leaves will appear wilted once they are fully blanched but will still be bright green.
3. Shock the leaves in an ice bath, stirring so that they chill quickly.
4. Strain the leaves out of the ice bath. Squeeze the excess water off with your hands and pat dry with paper towels.
5. Place half of the leaves in a blender with the oil. The oil should cover the leaves. Add more oil if necessary.
6. Blend on medium speed for about 1 minute or until smooth, then add the remaining parsley and the xanthan gum and blend for 1 more minute. If the parsley is not blending properly, add a little more oil.
7. Once a smooth purée has been obtained, remove from the blender and strain through a fine-mesh strainer. Reserve only the pulp that remains in the strainer; the remaining liquid will not be used. Refrigerate until needed. Discard after 2 days.

Sake and Lemon Sorbet with Flying Fish Roe and Shiso Leaf Jelly

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz SAKE AND LEMON SORBET BASE (page 385)

10 SHISO LEAF JELLY SQUARES

50 g / 1.76 oz tobiko wasabi (wasabi flying fish roe)

ASSEMBLY

1. Line 10 PVC tubes 2.5 cm / 1 in by 3.75 cm / 1.5 in diameter with acetate. Place on a sheet pan lined with acetate and freeze.
2. Churn or pacotize the sorbet, pour into a piping bag, and pipe into the prepared tubes. Even out the top with an offset spatula.
3. Freeze to harden. Cover with plastic wrap until needed.
4. Place a jelly square on the plate. Fold in one of the corners.
5. Place 5 g / .18 oz of flying fish roe on the jelly.
6. Take the sorbet out of the tube, take the acetate off, and place on the jelly in a standing position.
7. Serve immediately. Since this sorbet has alcohol in it, it tends to melt very quickly.

Shiso Leaf Jelly

YIELD 1.262 KG / 2 LB 12.53 OZ

750 g / 1 lb 10.46 oz water

500 g / 1 lb 1.64 oz shiso leaves

10 g / .35 oz salt, or as needed

2.5 g / .09 oz agar-agar

10 g / .35 oz gelatin sheets, bloomed

1. Place a 25 cm / 10 in by 38 cm / 15 in by 2 mm / .08 in Plexiglas frame on a half sheet pan.
2. Heat the water to 80°C / 176°F. Take the water off the heat and add 238 g / 8.4 oz of the shiso leaves. Cover and steep for 30 minutes, then strain out the leaves. Reserve the water and season with salt to taste.
3. Cut the remaining shiso leaves into a fine chiffonade.
4. Mix the shiso water with the agar-agar. Bring to a boil while stirring constantly with a whisk. Let boil for 10 seconds. Take the pot off the heat and add the gelatin. Stir until the gelatin is melted.
5. Pour the liquid into the prepared frame.
6. Sprinkle the shiso leaf chiffonade evenly throughout the entire surface of the liquid, working quickly so that the water doesn't set before the leaves are added. Let it set in the refrigerator.
7. Cut into 5-cm / 2-in squares using a metallic cutter or knife. Discard leftover jelly after 2 days.

Jalapeño Sorbet with Yellowtail Sashimi and Ponzu Sauce

YIELD 10 PORTIONS

COMPONENTS

10 thinly sliced yellowtail sashimi fillets (28 g / 1 oz per slice)

50 g / 1.76 oz ponzu sauce

200 g / 7.05 oz JALAPEÑO SORBET (page 385; reserve the seeds)

3 g / .11 oz TOASTED JALAPEÑO SEEDS

ASSEMBLY

1. Place 1 yellowtail fillet on the plate.
2. Pour 5 g / .18 oz of the ponzu sauce on and around the yellowtail.
3. Scoop a small quenelle (20 g / .71 oz) of the sorbet on top of the yellowtail.
4. Sprinkle a pinch of toasted jalapeño seeds on the sorbet and serve immediately.

NOTE Use the highest-quality fish possible. Always slice to order, with a very sharp knife against the grain.

Toasted Jalapeño Seeds

Toast the reserved seeds from the jalapeños used to make the sorbet in a sauté pan until brown and aromatic, about 1 minute. Reserve at room temperature in an airtight container. If kept in a dry cool place, they will last for 1 week.

Carrot Sorbet with Watercress Purée and Pea Shoots

YIELD 10 PORTIONS

COMPONENTS

150 g / 5.29 oz WATERCRESS PURÉE (see Note)

300 g / 10.58 oz CARROT SORBET (page 384)

30 pea shoots

ASSEMBLY

1. Spoon 15 g / 53 oz of watercress purée inside a small bowl.
2. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet on top of the watercress.
3. Trim the pea shoots to 5 cm / 2 in. Place 3 pea shoots leaning diagonally on the sorbet and serve immediately.

NOTE For the Watercress Purée, see the recipe for Parsley Purée (page 339); substitute watercress leaves for parsley.

Papaya Sorbet with Key Lime Juice and Black Sea Salt

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz Key lime juice

300 g / 10.58 oz PAPAYA SORBET (page 386)

5 g / .18 oz Hawaiian black sea salt

ASSEMBLY

1. Pour 10 g / 35 oz lime juice in a saucier. It will be served tableside.
2. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet into a small bowl.
3. Sprinkle a pinch (about .5 g) of salt on top of the quenelle.
4. Serve immediately. The lime juice should be spooned down the side of the sorbet.

Lime Sorbet with Spider Crab, Aji Amarillo, and Cilantro Oil

YIELD 10 PORTIONS

COMPONENTS

100 g / 3.53 oz AJI AMARILLO SAUCE

300 g / 10.58 oz spider crab meat from the legs; fully cooked

20 g / .71 oz CILANTRO OIL (see Notes)

300 g / 10.58 oz LIME SORBET (page 384)

30 FRIED CILANTRO LEAVES (see Notes)

30 micro-cilantro leaves

ASSEMBLY

1. Spoon 10 g / .35 oz of aji amarillo sauce into a small bowl.
2. Place 30 g / 1.06 oz of the crab next to the purée in a standing position.
3. Using an eyedropper, pour a few small drops of cilantro oil (about 2 g / .07 oz or 9 drops) throughout the aji amarillo.
4. Spoon about 30 g / 1.06 oz of the sorbet next to the crab.
5. Place the fried cilantro and the micro-cilantro throughout the bowl and serve immediately.

NOTES For the Cilantro Oil, see the recipe for Parsley Oil (page 332); substitute cilantro leaves for the parsley.

For the Fried Cilantro Leaves, see the recipe for Fried Sage (page 330); substitute 30 cilantro leaves for the sage leaves.

Aji Amarillo Sauce

YIELD 204 G / 7.2 OZ

200 g / 7.05 oz canned aji amarillo

4 g / .14 oz salt, or as needed

1. Pat the aji amarillo dry with paper towels and purée in a blender until smooth, about 2 minutes. Season with salt to taste.
2. Reserve under refrigeration until needed. Discard after 2 days.

NOTE Aji amarillo is a type of pepper widely used in South America, especially in Peru. It is mildly hot, with a unique smoky flavor and a bright yellow color. They are difficult to find fresh in the United States, but they can be found canned and are of very good quality.

Green Mango Sorbet with Paprika Bubbles

YIELD 10 PORTIONS

COMPONENTS

300 g / 10.58 oz GREEN MANGO SORBET (page 386)

300 g /10.58 oz PAPRIKA BUBBLES

ASSEMBLY

1. Scoop a medium quenelle (30 g / 1.06 oz) of the sorbet into a bowl.
2. Carefully and gently place 30 g / 1.06 oz of the paprika bubbles next to the sorbet and serve immediately.

Paprika Bubbles

YIELD 1 KG / 2 LB 3.27 OZ

886 g / 1 lb 15.25 oz water

100 g / 3.53 oz paprika

4 g / .14 oz soy lecithin powder

5 g / .18 oz salt, or as needed

10 g / .35 oz gelatin sheets, bloomed

1. Combine the water and paprika. Whisk in the soy lecithin until dissolved. Season with salt to taste.
2. Place 20 percent of the liquid in a saucepan and add the gelatin. Melt over low heat. Combine with the remaining liquid.
3. Using a beurre mixer, blend air into the liquid. Ideally the liquid will be in a shallow pan, slightly tilted to incorporate the largest amount of air into the liquid.
4. Once the bubbles have formed, spoon onto the plate. This will need to be re-mixed before each order. Discard after service.

NOTE Be very gentle when handling the bubbles.

chapter eight Base Recipes

ICE CREAMS

Classic Method Base Recipe Framework

All of the recipes for the classic custard method are based on the formula below; it is the "mother" recipe from which all other recipes are formulated. There is also a chart on the next page with the maximum and minimum percentages *recommended* for each ingredient. In the formulation, if the fat, water and solids are added, total amount for each ingredient is obtained; the serum solids are the result of adding the nonfat solids and the fat. See the definition of serum solids in Chapter 2 for more information.

This recipe is made to yield 5 kg / 11 lb .37 oz liquid base, but just like all the other recipes in this chapter, there is a percentage next to each amount so that the recipe can be formulated based on whatever yield is desired. In addition, spreadsheets are included in the electronic ancillary materials that will calculate the new recipe yields as well. The Pacojet is the recommended machine for this method, but the recipes are formulated to work with a batch freezer as well.

IMPORTANT NOTE: Always add .5 g / .02 oz of salt per liter of base. This will enhance flavors significantly. Do not consider it as part of the formula because the presence of this amount will not affect the structure or balance of the recipe.

	RECIPE FORMULATION		COMPOSITION OF INGREDIENT (%)			
INGREDIENT	AMOUNT	% OF TOTAL RECIPE	FAT	WATER	SERUM	NONFAT SOLIDS
Whole milk	3288 g	65.76	118.37 g (3.6%)	2893.44 g (88%)	394.56 g (12%)	276.19 g (8.4%)
Heavy cream	581.5 g	11.63	232.6 g (40%)	316.92 g (54.5%)	264.58 g (45.5%)	31.98 g (5.5%)
Sugar	781.5 g	15.63	0	0	0	781.5 g (100%)
Egg yolks	349 g	6.98	115.17 g (33%)	174.5 g (50%)	0	59.33 g (17%)
Flavor	0	0	0	0	0	0
Total	5000 g	100	466.14 g (9.32%)	3384.89 g (67.7%)	1615.14 g (32.3%)	1149 g (22.98%)

Minimum and Maximum Percentages Recommended for Formulation

INGREDIENT	MIN	MAX
Fat (from milk, heavy cream, butter, egg yolks, other dairy products, and in some cases, the added flavor)	2%	11%
Nonfat solids include all solids, even those found in dairy, minus the fat. Remember, solids can be found in egg yolks (50% is considered nonfat solids), sweeteners, garnishes, etc. Note: Nonfat solids are used for formulation only; they aren't an individual component of a recipe.	15%	30%
Total solids: Includes the above plus all fats, which can be found in all forms of dairy and added ingredients (for example, the fat content in milk chocolate).	25%	41%
Liquid: Refers to any and all ingredients minus all solids, including fats	100% minus solid%	100% minus solid%
Sugar (sweetening strength, is the addition of all sugars, solid and liquid): Remember that a variety of sugars can be used in combination, including those found in a flavor, such as chocolate.	16%	23%
Egg yolks	7%	9%
Flavors: Flavor percentages can increase when they aren't just a flavor per se (such as vanilla pods) and will contribute to other elements in the recipe, such as fat, sugar, solids, and water. In those cases, the flavor percentage can go up as high as 20% (or more), and its components will be part of the formulation.	2%	10%

Classic Ice Cream Method

1. Place the milk or milk and heavy cream mixture in a saucepot along with half the sugar. If there are any flavors that need to be steeped, such as vanilla pods, this is when they are added. (For specific instructions on how to incorporate other flavors, see Flavors on page 25).
2. Place the saucepot over high heat and stir for about 1 minute to dissolve some, but not all, of the sugar. The undissolved sugar will settle at the bottom of the pot to prevent the milk and heavy cream from scorching.
3. While this mix comes to a boil, place the egg yolks and the remainder of the sugar in a bowl. Whisk until it becomes a uniform mass.
4. Once the liquid comes to a boil, slowly pour half of it into the egg yolk–sugar mix while whisking constantly.
5. Once half of the liquid has been tempered with the egg yolk–sugar mix, pour the contents of the bowl back into the pot while whisking constantly and turn the heat down to medium or medium-low.
6. Whisk constantly until the mixture reaches 76°C / 170°F. At this temperature the mixture reaches a consistency called nappe, or "coat."
7. Turn the heat off and strain the base through a fine-mesh strainer into an appropriate container and place over an ice bath (see ice baths on page 36).

Banana Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

CARAMELIZED BANANAS

500 g / 1 lb 1.64 oz sugar

50 g / 1.76 oz lemon juice

600 g / 1 lb 5.16 oz ripe bananas, split in half lengthwise

ICE CREAM BASE

2.88 kg / 6 lb 5.59 oz / 57.56% milk

382 g / 13.47 oz / 7.64% heavy cream

792 g / 1 lb 11.94 oz / 15.83% sugar

349 g / 12.31 oz / 6.98% egg yolks

600 g / 1 lb 5.16 oz 12% Caramelized Bananas

1. **FOR THE CARAMELIZED BANANAS:** In an adequately sized sauté pan (one that will fit the sugar and bananas comfortably), combine the sugar and lemon juice with one-quarter of the weight of the sugar in water to obtain a wet-sand consistency.
2. Cook the sugar over high heat until the sugar has a dark amber hue, at about 170°C / 338°F. Add the bananas and turn the heat down to medium. Cook until the bananas are tender and have a caramelized (amber-brown) color, about 20 minutes, flipping the bananas as needed.
3. Cool the bananas and purée in a blender until smooth; pass through a fine-mesh strainer.
4. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
5. Strain the base through a fine-mesh strainer and cool over an ice bath.
6. Add the banana purée once the base has cooled. Age the base under refrigeration overnight.
7. Once the base has aged, churn to the desired consistency.
8. Harden for at least 2 and up to 4 hours. Reserve until needed.

NOTES The bananas will absorb some of the sugar from the caramelizing process; this will contribute to the sweetness of the recipe. This is why the added sugar amount is at a minimum.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Clotted Cream Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

2.02 kg / 4 lb 7.25 oz / 40.35% milk

418 g / 14.75 oz / 8.35% brown sugar

418 g / 14.75 oz / 8.35% granulated sugar

450 g / 15.87 oz / 8.99% egg yolks

1.7 kg / 3 lb 11.96 oz / 33.96% clotted cream

1. Make the ice cream base according to the Classic Ice Cream Method, but add the clotted cream once the base has been made and it is still hot. Whisk thoroughly to completely dissolve the clotted cream.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The fat content is slightly higher (.5 percent) than the maximum recommended; this will have no negative effect on the final product if it is churned or pacotized carefully.

Clotted cream is a flavor per se, but really is more of a solid ingredient. This is why it is above the maximum percentage of flavor recommended, because it is also contributing to fat, solids, and water content.

Since clotted cream has a high fat content, it can affect the initial emulsifying process (too many fat molecules present). When it is added at the end, it will blend with the other ingredients without disrupting the emulsion or the homogenization process.

Brown sugar is added for flavor, but it will also contribute to total solids as well as add a small amount of water.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Mascarpone Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

2.82 kg / 6 lb 3.47 oz / 56.33% skim milk

836 g / 1 lb 13.49 oz / 16.7% sugar

350 g / 12.35 oz / 7% egg yolks

1 kg / 2 lb 3.27 oz / 19.98% mascarpone

1. Make the ice cream base according to the Classic Ice Cream Method, but add the mascarpone once the base has been made and it is still hot. Whisk thoroughly to completely dissolve the mascarpone.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The mascarpone is a flavor, but it will contribute large amounts of fats, water, and solids; this is why the recipe uses skim milk. It is also why the percentage of flavor is much higher than the recommended maximum of 11 percent.

Take the same precautions as with the Clotted Cream Ice Cream (page 352).

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Cabrales Cheese Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

3.45 kg / 7 lb 9.69 oz / 69.01% milk

600 g / 1 lb 5.16 oz / 12% sugar

449 g / 15.84 oz / 8.98% egg yolks

500 g / 1 lb 1.64 oz / 10% Cabrales cheese, crumbled

1. Make the ice cream base according to the Classic Ice Cream Method, but add the cheese once the base has been made and it is still hot. Whisk thoroughly to completely dissolve the cheese.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Don't worry about the base turning gray or a light hue of blue; the amount of cheese is small enough that this won't be a problem.

This ice cream has a significant reduction in sugar because it will be used in a savory preparation, and this has an impact on solids percentage even though it has a solid (the cheese) added to it, because the cheese is only partially solid. Total solids are increased by adding more eggs.

Make sure to use Cabrales. If using another blue cheese, make sure to correct the formulation (water and fat content may differ); also, Cabrales is a somewhat mild blue cheese, compared to Roquefort, for example.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Balsamic Vinegar Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

2.7 kg / 5 lb 15.24 oz / 54% milk

800 g / 1 lb 12.22 oz / 16% heavy cream

850 g / 1 lb 13.98 oz / 17% sugar

350 g / 12.35 oz / 7% egg yolks

300 g / 10.58 oz / 6% balsamic vinegar

1. Make the ice cream base according to the Classic Ice Cream Method.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, add the balsamic vinegar to the base right before freezing (in the case of a Pacojet) and right before churning (in the case of a batch freezer). Otherwise, its acidity will curdle the milk and heavy cream. Churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Use a high-quality balsamic vinegar aged up to 5 years. Aged balsamic vinegars have very nuanced flavors and characteristics that will be lost in an ice cream base, so it would be almost impossible to tell the difference between a 5-year-old balsamic vinegar and a 25- or 50-year-old vinegar. Also, the older the vinegar, the more expensive it will be.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Oatmeal Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

OATMEAL-INFUSED MILK

4.29 kg / 9 lb 7.32 oz milk

800 g / 1 lb 12.22 oz old-fashioned oats

ICE CREAM BASE

3.29 kg / 7 lb 4.05 oz / 65.79% Oatmeal-Infused Milk

581 g / 1 lb 4.51 oz / 11.62% heavy cream

781 g / 1 lb 11.57 oz / 15.62% sugar

349 g / 12.31 oz / 6.98% egg yolks

1. **FOR THE OATMEAL-INFUSED MILK:** Place the milk in a pot over high heat and bring to a simmer.
2. Place the oats on a sheet pan lined with parchment paper and lightly toast in the oven at 200°C / 392°F until they begin to have a toasted aroma, about 5 minutes. They do not need to change color.
3. Add the toasted oats to the warm milk. It is crucial that the oats be added to the milk when both of them are hot for optimum steeping. Take the pot off the heat and cover with plastic wrap. Steep for only 5 minutes so that the milk doesn't thicken too much.
4. Weigh out the amount of milk for the ice cream base from the steeped milk. There might be some left over, but it's better than not having enough.
5. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
6. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
7. Once the base has aged, churn to the desired consistency.
8. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Review steeping instructions on page 27; the oatmeal component should not be part of the formulation (not a solid component).

If desired, add spices, such as cinnamon, and it will not affect the solids amount.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Crème Fraîche Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

2.02 kg / 4 lb 7.25 oz / 40.35% milk

836 g / 1 lb 13.5 oz / 16.7% sugar

450 g / 15.87 oz / 8.99% egg yolks

1.7 kg / 3 lb 11.96 oz / 33.96% crème fraîche

1. Make the ice cream base according to the Classic Ice Cream Method. Add the crème fraîche once the custard is made and it is still hot. Whisk thoroughly to completely dissolve the crème fraîche.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

"Burnt" Sugar Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

"BURNT" SUGAR CARAMEL

981 g / 2 lb 2.6 oz sugar

245 g / 8.64 oz water, or as needed

5 g / .18 oz lemon juice, or as needed

ICE CREAM BASE

3.09 kg / 6 lb 12.99 oz / 61.78% milk

581 g / 1 lb 4.51 oz / 11.62% heavy cream

982 g / 2 lb 2.61 oz / 19.63% "Burnt" Sugar Caramel

349 g / 12.31 oz / 6.98% egg yolks

1. **FOR THE "BURNT" SUGAR CARAMEL:** Weigh out the sugar for the caramel along with the water and lemon juice.
2. Combine the milk and cream from the ice cream base in a pot that can fit the ingredients comfortably and that has enough room to expand when the hot sugar is added (typically about twice the volume of the liquid); place over medium-high heat.
3. In a separate pot, combine the sugar with the water and lemon juice (to prevent crystallization) and cook over high heat until the sugar begins to smoke but does not literally burn (170°C / 338°F; do not confuse steam with smoke!).
4. Slowly pour the hot milk-cream mixture into the sugar while whisking constantly. This will result in the "burnt" caramel component. The liquid does not need to cool down; in fact, it will make the process a lot faster if it is used as soon as the caramel is made.
5. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
6. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
7. Once the base has aged, churn to the desired consistency.
8. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Praline Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

PRALINE PASTE

500 g / 1 lb 1.64 oz sugar

125 g / 4.41 oz water

20 g / .71 oz lemon juice

250 g / 8.82 oz Marcona almonds

250 g / 8.82 oz Piedmontese hazelnuts

100 g / 3.53 oz canola oil, or as needed

ICE CREAM BASE

2.97 kg / 6 lb 8.76 oz / 59.41% milk

538 g / 1 lb 2.99 oz / 10.76% heavy cream

738 g / 1 lb 10.05 oz / 14.76% sugar

353 g / 12.46 oz / 7.06% egg yolks

400 g / 14.11 oz / 8% Praline Paste

1. **FOR THE PRALINE PASTE:** Place the sugar in a saucepan and add the water and lemon juice to prevent crystallization. Bring the mixture to a boil over high heat.
2. Meanwhile, toast the nuts separately in a 200°C / 392°F oven.
3. Lightly grease a marble slab with canola oil.
4. Stir the nuts into the sugar when it reaches 180°C / 356°F. Make sure the nuts are hot; otherwise the sugar will seize and crystallize, because room-temperature nuts will quickly cool down the sugar, forcing crystallization.
5. Turn the heat down to medium and continue to stir until the nuts begin to make a popping sound, about 1 minute; immediately pour onto the oiled marble and let cool to room temperature.
6. Break the praline apart into pieces that will fit in a robot-coupe; process until a smooth paste is obtained, 5 to 7 minutes. Grind only half of the praline at a time.
7. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
8. Add the praline once the custard is made and it is still hot. Whisk thoroughly to completely dissolve the praline paste and incorporate all of the soluble components (fats and sugar).
9. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
10. Once the base has aged, churn to the desired consistency.
11. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The praline paste will contribute to the solids, fats, and sugar, as well as a small amount of water. The sugar component of the praline has been included in the percentage of solids (along with the percentage of the nuts that is not fat); consider this as well in the sugar percentage.

The fat percentage is on the high side, but most of it is fluid fat from the praline, which will not congeal while churning; in fact, it will produce a very smooth ice cream.

If fresh praline is not used, there are very high-quality premade pralines available for a price.

A typical ratio for praline is 50 percent sugar, 25 percent almonds, and 25 percent hazelnuts.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Apple Tatin Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

CANDIED APPLES

3 kg / 6 lb 9.82 oz sugar

50 g / 1.76 oz lemon juice

750 g / 1 lb 10.45 oz water, or as needed

1 kg / 2 lb 3.27 oz Granny Smith apples, peeled and diced into 1.25-cm / .5-in cubes

ICE CREAM BASE

3.01 kg / 6 lb 10.17 oz / 60.22% milk

586 g / 1 lb 4.67 oz / 11.72% heavy cream

400 g / 14.11 oz / 8% sugar

452 g / 15.94 oz / 9.04% egg yolks

550 g / 1 lb 3.4 oz / 11% Candied Apples

1. **FOR THE CANDIED APPLES:** In a large sauté pan, combine the sugar, lemon juice, and enough water to obtain a wet-sand consistency; bring to a boil over high heat.
2. When the sugar begins to turn a pale yellow (130°C / 266°F), add the apples and continue to cook over medium heat until the sugar is caramelized and the apples are translucent, about 30 minutes.
3. Pour the contents into a large conical strainer to drain the excess moisture. Place the candied apples on a sheet pan lined with parchment paper and let cool to room temperature.
4. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method. If using a batch freezer, purée 550 g / 1 lb 3.4 oz of the candied apples in a blender and whisk thoroughly to completely incorporate them into the finished custard base. If using a Pacojet, the whole candied apples can be combined with the custard base in the beaker (about 100 g / 3.53 oz per beaker). Cool the base over an ice bath. Age under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE Candied apples are very sweet, and 50 percent of their solid weight is considered part of the sweetening component of the base.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Lemon and Buttermilk Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

2.71 g / 5 lb 15.59 oz / 54.15% milk

517 g / 1 lb 2.26 oz / 10.33% heavy cream

917 g / 2 lb .36 oz / 18.32% sugar

12 lemons

311 g / 10.95 oz / 6.21% egg yolks

550 g / 1 lb 3.4 oz / 10.99% buttermilk

1. Combine the milk, cream, and half of the sugar in a pot. Zest all 12 lemons directly into the pot using a rasp.
2. Make the ice cream base according to the Classic Ice Cream Method. Add the buttermilk once the custard is made and it is still hot. Whisk thoroughly to completely dissolve the buttermilk.
3. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

White Truffle Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

TRUFFLE-INFUSED MILK

200 g / 7.05 oz white truffle trimmings

3.5 kg / 7 lb 11.46 oz milk

ICE CREAM BASE

3.29 kg / 7 lb 4.05 oz / 65.79% Truffle-Infused Milk

581 g / 1 lb 4.51 oz / 11.62% heavy cream

781 g / 1 lb 11.57 oz / 15.62% granulated sugar

349 g / 12.31 oz / 6.98% egg yolks

1. **FOR THE TRUFFLE-INFUSED MILK:** Steep the truffles in the milk for 30 minutes. Strain through a fine mesh sieve, then weigh out the amount of milk needed for the recipe.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
3. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Typically restaurants that serve shaved white truffles on their savory items will have odds and ends from those shaved truffles that cannot be used, at least not for shaving. This is an opportunity to use a high-cost ingredient with no cost to you.

This recipe has the minimum amount of sugar added because it will hinder the truffle's flavor.

It is tempting to use white truffle oil, but the results aren't very good. It feels like a greasy ice cream, if you can envision that.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Brown Butter Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

BROWN BUTTER

1 kg / 2 lb 3.27 oz butter, soft

ICE CREAM BASE

3.43 kg / 7 lb 8.99 oz / 68.56% skim milk

800 g / 1 lb 12.22 oz / 15.99% sugar

373 g / 13.17 oz / 7.46% egg yolks

400 g / 14.11 oz / 8% Brown Butter

1. **FOR THE BROWN BUTTER:** Place the butter in a saucepan over high heat; melt and cook until the milk solids caramelize (they will caramelize and will smell like toasted hazelnuts; this is also known as beurre noisette).
2. Cool the butter to room temperature.
3. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method. Add the brown butter to the ice cream base when it is made and it is still hot. Add the brown butter in liquid form, not when it is solid. Whisk thoroughly to completely incorporate the brown butter.
4. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Black and Tan Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

2.64 kg / 5 lb 13.12 oz / 52.8% milk

523 g / 1 lb 2.46 oz / 10.46% heavy cream

923 g / 2 lb .57 oz / 18.46% sugar

414 g / 14.6 oz / 8.28% egg yolks

500 g / 1 lb 1.64 oz / 10% Black and tan beer (see Notes)

1. Make the ice cream base according to the Classic Ice Cream Method. Cool over an ice bath.
2. Add the beer once the custard base is made and it has cooled. Whisk thoroughly to completely dissolve the beer.
3. Strain the base through a fine-mesh strainer. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES "Black and tan" refers to equal parts dark beer and ale. The beer in this recipe can be substituted with other types of beer.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Lemon Curd Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

LEMON CURD

500 g / 1 lb 1.64 oz lemon juice

500 g / 1 lb 1.64 oz sugar

500 g / 1 lb 1.64 oz eggs

ICE CREAM BASE

2.61 kg / 5 lb 12.06 oz / 52.14% milk

492 g / 1 lb 1.37 oz / 9.83% heavy cream

625 g / 1 lb 6.06 oz / 12.49% sugar

279 g / 9.84 oz / 5.57% egg yolks

1 kg / 2 lb 3.27 oz / 19.97% Lemon Curd

1. **FOR THE LEMON CURD:** Combine the lemon juice, sugar, and eggs in a medium bowl and place over a water bath. Whisk the ingredients together until a homogenous mass is obtained.
2. Stir constantly and cook until the curd reaches 82°C / 180°F.
3. Strain through a fine-mesh strainer and cool over an ice bath.
4. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
5. Add the lemon curd to the custard base once it is finished and cooled. Whisk thoroughly to completely dissolve the lemon curd.
6. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
7. Once the base has aged, churn to the desired consistency.
8. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The percentage of egg yolks is less than 7 percent because the amount of eggs in the lemon curd compensates for the difference. The amount of sugar is not at least 16 percent because the amount of sugar in the lemon curd compensates for the difference.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Burnt Orange Marmalade Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

BURNT ORANGE MARMALADE

4 kg / 8 lb 13.09 oz navel oranges sliced into 0.5-cm / 0.2-in slices, ends removed

4 kg / 8 lb 13.09 oz sugar

4 kg / 8 lb 13.09 oz milk

ICE CREAM BASE

3.09 kg / 6 lb 12.99 oz / 61.78% milk (infused with Burnt Orange Marmalade)

631 g / 1 lb 6.26 oz / 12.63% heavy cream

200 g / 7.05 oz / 16% sugar

479 g / 1 lb 0.9 oz / 9.58% egg yolks

1.33 kg / 2 lb 14.91 oz / 26.6% Burnt Orange Marmalade from infused milk

1. **FOR THE MARMALADE:** Blanch the oranges 3 times in boiling water, changing the water each time.
2. Weigh out the blanched oranges, then weigh out the same amount of sugar (approximately 4 kg / 8 lb 13.09 oz).
3. Place both in a large pot, and cook over low heat until the marmalade reaches 190°C / 380°F. To prevent it from burning, pour it onto an oiled marble surface and spread it out.
4. Once the marmalade cools, it will harden. Since the sugar was cooked further than for a regular marmalade, it won't be very smooth, but that doesn't matter because it is going to be steeped into the milk. The hardened sugar will dissolve into the milk.
5. Add the marmalade to the milk and steep for 45 minutes.
6. **FOR THE ICE CREAM BASE:** Strain the milk and measure 3.09 kg / 6 lb 12.99 oz of the milk. Reserve 1.33 kg / 2 lb 15.02 oz of the marmalade. Make the ice cream base according to the Classic Ice Cream Method.
7. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
8. Once the base has aged, churn to the desired consistency. Stir in the reserved marmalade just after churning.
9. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The recipe contains 800 g / 1 lb 12.22 oz of sugar, but only 200 g / 7.05 oz of it comes from raw granulated sugar. The other 600 g / 1 lb 5.16 oz come from the sugar in the marmalade.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Demerara Sugar Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

3.4 kg / 7 lb 7.93 oz / 67.92% milk

466 g / 16.43 oz / 9.31% heavy cream

800 g / 1 lb 12.22 oz / 15.98% Demerara sugar

340 g / 11.99 oz / 6.79% egg yolks

1. Make the ice cream base according to the Classic Ice Cream Method.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Using this type of sugar won't make a difference in the Classic Ice Cream Method.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Chestnut Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

CHESTNUT PURÉE

296 g / 10.44 oz unsweetened chestnut purée

195 g / 6.88 oz sugar

159 g / 5.61 oz water

ICE CREAM BASE

2.42 kg / 5 lb 5.36 oz / 48.35% milk

840 g / 1 lb 13.63 oz / 16.78% heavy cream

745 g / 1 lb 10.28 oz / 14.89% sugar

350 g / 12.35 oz / 6.99% egg yolks

650 g / 1 lb 6.93 oz / 12.99% Chestnut Purée (in syrup)

1. **FOR THE CHESTNUT PURÉE:** Whisk together the purée, sugar, and water in a saucepan and cook over medium heat until all the ingredients have mixed evenly.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method. Cool the ice cream base before adding the chestnut purée. Add the purée to the ice cream base and whisk thoroughly to completely dissolve the purée.
3. Strain the base through a fine-mesh strainer and refrigerate. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This formula is made with unsweetened chestnut purée that has been blended with a sugar syrup made with 195 g / 6.88 oz sugar (or 30 percent of the total weight of the unsweetened chestnut purée and syrup combined) and 159 g / 5.61 oz water (or 24.4 percent of the total weight of the unsweetened chestnut purée and syrup combined). Since the chestnut purée used consisted of 80 percent chestnuts and 20 percent water, 296 g / 10.44 oz of purée was used, 49 g / 1.73 oz of which was water. This amount accounts for 23.75 percent of the total water weight. The other 76.25 percent of total water weight is added to the 195g / 6.88 oz of sugar. Sweetened chestnut purée must have at least 38 percent chestnuts, so its total solids amount of 68 percent is 38 percent chestnuts and 30 percent sugar.

The sugar is below 16 percent because of the sugar added to the chestnut purée. The sugar syrup contributes to the total sugar amount and compensates for the lack of sugar in this percentage.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Port Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

2.59 kg / 5 lb 11.36 oz / 51.77% milk

582 g / 1 lb 4.53 oz / 11.63% heavy cream

782 g / 1 lb 11.58 oz / 15.63% sugar

549 g / 1 lb 3.37 oz / 10.97% egg yolks

500 g / 1 lb 1.64 oz / 9.99% port

1. Make the ice cream base according to the Classic Ice Cream Method. Cool over an ice bath.
2. Once the base is made and cooled, whisk in the port thoroughly to completely incorporate the port.
3. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES To cook out the alcohol flavor, the port may be added while the ice cream base is still warm.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Prune-Armagnac Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

PRUNE-ARMAGNAC PURÉE

500 g / 1 lb 1.64 oz prunes

200 g / 7.05 oz sugar

250 g / 8.82 oz Armagnac

ICE CREAM BASE

2.52 kg / 5 lb 8.88 oz / 50.38% milk

536 g / 1 lb 2.9 oz / 10.71% heavy cream

651 g / 1 lb 6.96 oz / 13.01% sugar

345 g / 12.17 oz / 6.9% egg yolks

950 g / 2 lb 1.51 oz / 18.99% Prune-Armagnac Purée

1. **FOR THE PRUNE-ARMAGNAC PUREE:** Purée all of the ingredients in a blender.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method. Cool the base over an ice bath.
3. Once the ice cream base is cooled, add the prune-Armagnac purée and whisk thoroughly to completely incorporate the purée.
4. Strain the base through a fine-mesh strainer. Age the base overnight under refrigeration.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Prunes have a water content of 20 g / .71 oz per 500 g / 1 lb 1.64 oz (or 4%). 20 g / .71 oz + 250 g / 8.82 oz Armagnac liquid equals 270 g / 9.52 oz liquid in 950 g / 2 lb 1.5 oz of finished Prune-Armagnac purée. Therefore, the water content of the purée is 28.42%.

The percentage of sugar is below 16 percent because of the sugar found in the garnish.

The garnish percentage exceeds the maximum recommended amount, but the prune-Armagnac purée is not just a flavor in itself; it is also contributing to solids and water, and it will give the finished product a very smooth consistency.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Espresso-Cardamom Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ESPRESSO–CARDAMOM-INFUSED MILK

71 g / 2.5 oz ground espresso

10 cardamom pods, toasted and cracked

2.71 kg / 5 lb 15.59 oz milk

ICE CREAM BASE

2.61 kg / 5 lb 12.06 oz / 52.23% Espresso–Cardamom-Infused Milk

849 g / 1 lb 13.95 oz / 16.99% heavy cream

810 g / 1 lb 12.57 oz / 16.21% sugar

728 g / 1 lb 9.68 oz / 14.57% egg yolks

1. **FOR THE INFUSED MILK:** Grind the espresso right before adding it to the milk. Steep the ground espresso and cardamom pods in the milk until the milk is infused, about 10 minutes. Strain the milk through a fine-mesh strainer.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
3. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES There is an additional 100 g / 3.53 oz of milk to compensate for the milk that the espresso and cardamom will absorb.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Cinnamon Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

CINNAMON-INFUSED MILK

250 g / 8.82 oz cinnamon sticks, toasted and crushed

3.59 kg / 7 lb 14.63 oz milk, hot

ICE CREAM BASE

3.29 kg / 7 lb 4.05 oz / 65.76% Cinnamon-Infused Milk

582 g / 1 lb 4.53 oz / 11.63% heavy cream

782 g / 1 lb 11.58 oz / 15.63% sugar

349 g / 12.31 oz / 6.98% egg yolks

1. **FOR THE INFUSED MILK:** Steep the cinnamon sticks in the hot milk for about 30 minutes.
2. Strain the milk through a fine-mesh strainer.
3. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
4. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The 300 g / 10.58 oz of additional milk is to compensate for any loss of volume during steeping.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Pumpkin Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

PUMPKIN PURÉE

2 medium-size pumpkins

SPICE-INFUSED MILK

2.29 kg / 5 lb .78 oz milk

7 cinnamon sticks, toasted and cracked

5 cloves, toasted and cracked

½ nutmeg, toasted and cracked

ICE CREAM BASE

2.29 kg / 5 lb .78 oz / 45.77% Spice Infused Milk

482 g / 1 lb 1 oz / 9.63% heavy cream

882 g / 1 lb 15.11 oz / 17.63% sugar

349 g / 12.31 oz / 6.98% egg yolks

1 kg / 2 lb 3.27 oz / 19.99% Pumpkin Purée

1. Preheat an oven to 200°C / 392°F.
2. **FOR THE PUMPKIN PURÉE:** Split the pumpkins in half and place facedown on a sheet pan lined with parchment paper. Placing them facedown will help dry out the pumpkins, to avoid adding excessive moisture to the recipe; pumpkins are almost 94 percent water.
3. Bake the pumpkins until the flesh is very tender, about 20 minutes.
4. Peel the skin off (it should come right off if the pumpkin is properly cooked).
5. Purée the pumpkin in a blender until smooth, about 2 minutes.
6. **FOR THE INFUSED MILK:** Bring the milk to a simmer with the spices over medium-high heat; remove from the heat and steep for 10 minutes. Strain the milk.
7. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method. Add the pumpkin purée to the ice cream base while it is still hot. Whisk thoroughly to completely incorporate the pumpkin purée.
8. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
9. Once the base has aged, churn to the desired consistency.
10. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The pumpkin purée exceeds the recommended percentage of flavor, because it is not only a flavor, it is part of the solids component of the recipe. Remember that infused flavors should not exceed 11 percent of the recipe weight (even that is a lot for, let's say, vanilla beans); when the flavor is also a solids component its percentage can go up, as long as it is balanced with the other ingredients and the recommended total solids percentage is not exceeded.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Vanilla Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.29 kg / 7 lb 4.05 oz / 65.76% milk

582 g / 1 lb 4.53 oz / 11.63% heavy cream

782 g / 1 lb 11.58 oz / 15.63% sugar

349 g / 12.31 oz / 6.98% egg yolks

150 g / 5.29 oz Tahitian vanilla beans

1. Make the ice cream base according to the Classic Ice Cream Method.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The 150 g / 5.29 oz of vanilla bean (preferably Tahitian) are for flavor only and are not part of the ice cream amount for formulation.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Chocolate Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.32 kg / 7 lb 5.11 oz / 66.39% milk

123 g / 4.34 oz / 2.46% heavy cream

703 g / 1 lb 8.8 oz / 14.06% sugar

355 g / 12.52 oz / 7.1% egg yolks

500 g / 1 lb 1.64 oz / 9.99% dark chocolate, melted (64%)

1. Make the ice cream base according to the Classic Ice Cream Method. Add the melted chocolate to the ice cream base while it is still hot. Whisk thoroughly to fully incorporate the chocolate.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Always remember to use a high-quality chocolate. The chocolate used in this formula has 64 percent chocolate liquor. Other chocolates may be substituted; however, it would be necessary to make sure that the level of fat in the recipe would be in range. The sugar in this recipe is only 14 percent because of the amount of sugar present in the chocolate used. For 64 percent chocolate liquor chocolate, there is 36 percent sugar, which is included in the total solid percentage of 60 percent.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Macadamia Nut Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

MACADAMIA NUT-INFUSED MILK

1 kg / 2 lb 3.27 oz macadamia nuts

4 kg / 8 lb 13.09 oz milk

ICE CREAM BASE

3.24 kg / 7 lb 2.29 oz / 64.76% Macadamia Nut-Infused Milk

582 g / 1 lb 4.53 oz / 11.63% heavy cream

832 g / 1 lb 13.35 oz / 16.63% sugar

349 g / 12.31 oz / 6.98% egg yolks

1. **FOR THE INFUSED MILK:** Crush and toast the macadamia nuts in a 176°C / 350°F oven until the nuts begin to have a toasted aroma. Bring the milk to a simmer and add the nuts to the hot milk when they come out of the oven. Steep the milk for 30 minutes, strain the nuts out and weigh the required amount of milk.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
3. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Review the information on steeping on page 27.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Coconut Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

COCONUT-INFUSED MILK

1.5 kg / 3 lb 4.91 oz desiccated coconut

3.5 kg / 7 lb 11.46 oz skim milk

ICE CREAM BASE

2.62 g / 5 lb 12.42 oz / 52.39% Coconut-Infused Milk

682 g / 1 lb 8.06 oz / 13.64% sugar

349 g / 12.31 oz / 6.98% egg yolks

1.35 kg / 2 lb 15.62 oz / 26.99% coconut purée

1. **FOR THE COCONUT-INFUSED MILK:** Toast the coconut in a 176°C / 350°F oven until it begins to have a toasted aroma. Bring the skim milk to a simmer over medium-high heat. Steep toasted coconut while it is hot in the hot skim milk. Strain through a fine-mesh strainer.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Classic Ice Cream Method.
3. Add the coconut purée once the custard is made and hot. Whisk thoroughly to completely dissolve the coconut purée.
4. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The toasted coconut is used only to infuse its flavor into the recipe.

The coconut purée has a very high fat content, which is why this recipe is made with skim milk and has no heavy cream.

The sugar percentage is low, but most of the solids percentage is sugar (factory-made purées contain an average of 10 percent of their weight in sugar), which will impact the sweetness of the recipe.

The fat is close to being high, but it is a fluid fat that will not congeal while churning or pacotizing.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

White Chocolate Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

2.19 kg / 4 lb 13.25 oz / 43.76% whole milk

1.04 kg / 2 lb 4.68 oz / 20.78% skim milk

534 g / 1 lb 2.84 oz / 10.67% sugar

341 g / 12.03 oz / 6.81% egg yolks

900 g / 1 lb 15.75 oz / 17.98% white chocolate, finely chopped or pistoles

1. Make the ice cream base according to the Classic Ice Cream Method. Add the white chocolate while the base is still hot and whisk thoroughly to completely dissolve the white chocolate.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The sugar amount is considerably low because this ice cream is for a savory application (served with caviar in a savory tuile cone).

It has a very high solids percentage, but the fat percentage is within a good range.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

GELATOS

Classic Method

Don't forget that the only real distinction between ice cream of any kind and gelato is the overrun (see overrun, page 63). The following recipes are based on the classic custard formulas and their recommended maximum and minimum percentages of ingredients. This means that all of the recipes for classic custard can also be gelatos, if they are churned in a batch freezer to control their overrun.

Add .5 g / .02 oz of salt per liter of base to further enhance flavors; the formula does not need to be adjusted because the amount of salt is minimal.

Burnt Milk Gelato

YIELD 5 KG / 11 LB .36 OZ BASE

GELATO BASE

4.5 kg / 9 lb 14.73 oz / 74.98% milk

348 g / 12.28 oz / 6.96% heavy cream

801 g / 1 lb 12.25 oz / 16.02% sugar

352 g / 12.42 oz / 7.04% egg yolks

1. Cook the milk in a very tall pot until the milk solids and fat burn on the bottom of the pot, thus infusing the milk with its flavor. Reserve 3.5 kg / 7 lb 11.46 oz of the burnt milk.
2. Make the gelato according to the Classic Ice Cream Method.
3. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES There are no solids left in the milk because they are all burned out and left on the bottom of the pot.

The fat is lower than that of whole milk because a portion of the fat will sink to the bottom of the pot and burn while cooking.

If pacotizing the base, the gelato can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

I first tasted this flavor as an ice cream in Oaxaca, Mexico. It was made by a man and his family who would hand crank close to fifteen different flavors daily without the luxury of having a freezer to keep them in once the bases were frozen. They would simply keep the buckets containing the ice creams and sorbets in the saltpeter that was used to freeze them. The saltpeter was refreshed throughout the day. They had an array of unusual flavors, like avocado and corn, which many people may not find that unusual, but I am talking about very humble people with very few resources who I am willing to bet couldn't care less about trends and what the Adriàs are doing in Spain. Even more astounding is the fact that this was in the early 1980s, when unusual flavors weren't the trend. At first I was hesitant to taste something burned, but after the first spoonful I was sold. It tasted just like it was intended to: burnt milk, but when combined with the other ingredients and in its frozen state, I fell in love with that flavor, which was smoky, sweet, cold, and rich at the same time. This was where it all began for me, in a remote village where ice cream and sorbet making is a craft that has remained unchanged for decades. If you ever go to Oaxaca, make sure you visit the ruins in Monte Alban. I don't know the man's name, but I'm sure he's still there, making wonderful ice cream with a whole lot of elbow grease. I wonder what he'd think of this book?

Turrón Gelato

YIELD 5 KG / 11 LB .36 OZ BASE

GELATO BASE

2.93 kg / 6 lb 7.35 oz / 58.52% milk

523 g / 2 lb 2.45 oz / 10.48% heavy cream

703 g / 1 lb 8.8 oz / 14.04% sugar

350 g / 1 lb 5.89 oz / 6.99% egg yolks

500 g / 1 lb 1.64 oz / 9.99% turrón, crumbled

1. Make the gelato base according to the Classic Ice Cream Method. Add the turrón while the base is still hot; whisk thoroughly to completely dissolve.
2. Strain the base through a fine-mesh strainer and cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.

4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The percentage of sugar in this recipe is not 16 percent due to the sweetness of the turrón, which compensates for the smaller amount of sugar used.

If pacotizing the base, the gelato can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Turrón is an almond confection made in Spain; do not confuse it with Italian torrone, as they are two different items. Turrón is crumbly and easily dissolves into the hot ice cream base, leaving very few solids behind once strained.

Strawberry Gelato

YIELD 5 KG / 11 LB .36 OZ BASE

GELATO BASE

2.85 kg / 6 lb 4.53 oz / 57% milk

400 g / 14.12 oz / 8% heavy cream

900 g / 1 lb 15.75 oz / 18% sugar

350 g / 12.35 oz / 7% egg yolks

500 g / 1 lb 1.64 oz / 10% strawberry purée

1. Make the gelato according to the Classic Ice Cream Method. Cool the base over an ice bath.
2. Add the strawberry purée once the gelato base has cooled; whisk thoroughly to completely dissolve the purée.
3. Strain the base through a fine-mesh strainer. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Add the strawberry purée once the custard has cooled down. If it is added while the base is hot, it will change the flavor of the strawberries.

Always use strawberries when they are in season for the best flavor; fraises des bois have an excellent flavor, if available.

To enhance the strawberry flavor further, macerate them with 30 g / 1.06 oz of balsamic vinegar (just enough to coat them) and 30 g / 1.06 oz of sugar for at least an hour. Purée them together. Be sure to make the necessary adjustments in the recipe (because of the addition of balsamic vinegar and sugar). The amounts won't change dramatically, but the flavor will.

Another alternative is to roast the strawberries with 50 g / 1.06 oz of sugar until they are tender, then purée them. If desired, roast the strawberries with spices, such as cinnamon, juniper berries, allspice, star anise, etc., to make Spiced Strawberry Gelato.

If pacotizing the base, the gelato can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Roasted Black Mission Fig Gelato

YIELD 5 KG / 11 LB .36 OZ BASE

MISSION FIG PURÉE

750 g / 1 lb 10.45 oz Mission figs

GELATO BASE

2.72 kg / 5 lb 15.94 oz / 54.32% milk

537 g / 1 lb 2.94 oz / 10.72% heavy cream

900 g / 1 lb 15.75 oz / 17.97% sugar

350 g / 12.35 oz / 6.99% egg yolks

500 g / 1 lb 1.64 oz / 9.99% Mission Fig Purée

1. **FOR THE FIG PURÉE:** Preheat an oven to 170°C / 338°F.
2. Split the figs in half and trim off the stems. Place them in a hotel pan with the seed side up. Roast until tender, about 20 minutes, then purée in a blender.
3. **FOR THE GELATO BASE:** Make the gelato base according to the Classic Ice Cream Method. Add the fig purée to the base while it is still hot; whisk thoroughly to completely dissolve the purée.
4. Strain the base through a fine-mesh strainer. Do not strain the base if you want to keep the seeds for texture. Cool the base over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If desired, add spices (such as cinnamon, star anise, and clove) to the figs while they are roasting for additional flavors. Citrus peel is another nice addition. Adding sugar or other liquids (such as port) is not recommended while roasting.

If pacotizing the base, the gelato can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Gianduja Gelato

YIELD 5 KG / 11 LB .36 OZ BASE

GELATO BASE

3.09 kg / 6 lb 13 oz / 61.76% milk

282 g / 9.95 oz / 5.63% heavy cream

782 g / 1 lb 11.58 oz / 15.63% sugar

349 g / 12.31 oz / 6.98% egg yolks

500 g / 1 lb 1.64 oz / 9.99% gianduja, finely chopped

1. Make the gelato base according to the Classic Ice Cream Method. Add the gianduja while the base is still hot; whisk thoroughly to completely dissolve the gianduja.
2. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Most high-quality gianduja contains no less than 32 percent cocoa solids, 8 percent nonfat solids, and between 20 and 40 percent hazelnuts (in paste form). As for fat, the average is between 22 and 40 percent.

The sugar percentage is under the minimum recommended because of the sugar contained in the gianduja, which will affect the sweetness.

If pacotizing the base, the gelato can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Sicilian Pistachio Gelato

YIELD 5 KG / 11 LB .36 OZ BASE

GELATO BASE

3.37 g / 7 lb 6.87 oz / 67.39% milk

782 g / 1 lb 11.55 oz / 15.64% sugar

349 g / 12.31 oz / 6.98% egg yolks

500 g / 1 lb 1.64 oz / 9.99% unsweetened pure pistachio paste

1. Make the gelato base according to the Classic Ice Cream Method. Add the pistachio paste while the custard is still hot. Whisk thoroughly to completely dissolve the paste.
2. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Sicilian pistachios are arguably the highest-quality pistachios available, on account of their flavor, texture, and intense green color.

Pistachios contain 7.64 percent sugar by weight and they are one of the fattier nuts, with 44.44 percent fat by weight.

If pacotizing the base, the gelato can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Modern Method Base Recipe Framework

All of the ice cream recipes made in the modern method are based on the formula below; it is the "mother" recipe from which all other recipes are formulated. There is also a chart on the next page with the maximum and minimum percentages *recommended* for each ingredient.

This recipe is made to yield 5 kg / 11 lb .37 oz liquid base, but just like all the other recipes in this chapter, there is a percentage next to each amount so that the recipe can be formulated based on whatever yield is desired. In addition, spreadsheets are included in the electronic ancillary materials that will calculate the new recipe yields as well.

Although there is the option of the non-custard ice cream base, it is a matter of personal preference that these recipes contain eggs, because the alternative would be to increase the milk powder percentage in order to increase solids percentages, and while milk powder has its place, too much of it in a recipe imparts its characteristic flavor, which can overwhelm the principal flavor(s).

The sugar percentage (16 percent) has been broken down to 66.66 percent granulated sugar, 25 percent glucose powder, and 8.35 percent trimoline, which will give us enough sweetening power with the right proportion of solids, with the added benefit of the qualities of glucose powder and trimoline (see sugars on page 15).

If possible, churn these ice cream bases in a batch freezer, but they work just as well in a Pacojet if the precautions mentioned in chapter 3 are followed (referring to machines, page 15).

When adding a flavor to the recipe the necessary adjustments must be made in regard to fat content, water content, and solids content in order to obtain the precise yield needed while still keeping the recipe properly balanced.

Try to respect the recommended maximum and minimum percentages in the first chart. If the percentages over or under by a fraction of a percent, the ice cream base will hardly suffer; it's when they're off by 3, 4, or 5 percent or more that a dramatic impact on the result (visually and/or texturally) will be seen.

	RECIPE FORMULATION		COMPOSITION OF INGREDIENT (%)			
INGREDIENT	AMOUNT	% OF TOTAL RECIPE	FAT	WATER	SERUM	NONFAT SOLIDS
Whole milk	3679.64 g	73.59	132.47 g (3.6%)	3238.08 g (88%)	441.56 g (12%)	309.09 g (8%)
Milk powder	152.86 g	3.06	0	6.11 g (4%)	0	146.74 g (96%)
Sugar	533.28 g	10.67	0	0	0	533.28 g (100%)
Glucose powder	200 g	4	0	10 g (5%)	0	190 g (95%)
Trimoline	66.72 g	1.33	0	14.68 g (22%)	0	52.04 g (78%)
Stabilizer-Emulsifier Mix	17.5 g	.35	0	0	0	17.5 g (100%)
Egg yolks	350 g	7	115.50 g (33%)	175 g (50%)	0	59.5 g (17%)
Flavor	0	0	0	0	0	0
Total	5000 g	100	247.97 g (4.96%)	3443.88 g (68.88%)	1556.12 (31.12%)	1308.15 g (26.16%)

Minimum and Maximum Percentages

	ICE CREAM		CUSTARD-BASE ICE CREAM	
INGREDIENT	MIN	MAX	MIN	MAX
Fat (from milk, heavy cream, butter, egg yolks, and other dairy products)	7%	11%	2%	11%
Stabilizers	.30%	1%	.30%	1%
Emulsifiers	.20%	.30%	.20%	.30%
Nonfat solids include all solids, even those found in dairy, minus the fat. Remember, solids can be found in egg yolks (50% is considered nonfat solids), sweeteners, garnishes, etc. Note: nonfat solids are used for formulation only; they aren't an individual component of a recipe.	24%	30	15%	30
Total solids: Includes the above plus all fats, which can be found in all forms of dairy and added ingredients (for example, the fat content in milk chocolate).	31%	41%	25%	41%
Liquid: refers to any and all ingredients minus all solids, including fats	100% minus solid%	100% minus solid%	100% minus solid%	100% minus solid%
Sugar (sweetening strength, is the addition of all sugars, solid and liquid). Remember that a variety of sugars can be used in combination.	16%	23%	16%	23%
Egg yolks	N/A	N/A	7%	9%
Flavors	2%	10%	2%	10%

Modern Method

1. Scale all of the ingredients accurately.
2. Mix 10 percent of the sugar with the stabilizer, which can be combined with the emulsifier(s).
3. At 25°C / 77°F, add the milk powder and flavoring. From this point on, whisking should be constant to prevent any of the ingredients from settling to the bottom of the pot.
4. At 35°C / 95°F, pour in and mix all of the sugars until dissolved. This refers to any type of sugar, either in solid (granulated) or liquid form (trimoline, for example). Some recipes might contain egg yolks. If so, they should be whisked in at this temperature.
5. At 45°C / 113°F, add the heavy cream, if applicable.
6. Before the mixture reaches 50°C / 122°F, add the stabilizer-sugar mix in a slow pouring motion while whisking constantly.
7. Bring the mixture up to 85°C / 185°F, take off the heat, and cook for 2 more minutes while whisking constantly to pasteurize and homogenize the mixture.
8. Pass the mixture through a fine-mesh strainer and chill to 4°C / 39°F as quickly as possible, using an ice bath. If steeping flavors, chill over an ice bath, but do not pass through a fine-mesh strainer until just before churning.
9. Let the mixture age under refrigeration for at least 4 hours or ideally for 12 hours.
10. Before churning, give the base a good stir.
11. Churn to –8°C / 18°F.
12. Place the churned product in a –10°C / 14°F freezer. Reserve for service.

Stabilizer-Emulsifier Mix

200 g / 7.05 oz xanthan gum

250 g / 8.82 oz locust bean gum

250 g / 8.82 oz guar gum

100 g / 3.53 oz monoglycerides (emulsifier)

100 g / 3.53 oz diglycerides (emulsifier)

Mix all of the ingredients together thoroughly.

Almond Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ALMOND-INFUSED MILK

1 kg / 2 lb 3.27 oz Marcona almonds, slivered and toasted

4.3 kg / 9 lb 7.68 oz milk

ICE CREAM BASE

3.68 kg / 8 lb 1.81 oz / 73.59% Almond-Infused Milk

153 g / 5.39 oz / 3.06% milk powder

533 g / 1 lb 2.81 oz / 10.66% sugar

200 g / 7.05 oz / 4% glucose powder

67 g / 2.35 oz / 1.34% trimoline

18 g / .28 oz / .36% Stabilizer-Emulsifier Mix (above)

350 g / 12.35 oz / 7% egg yolks

1. **FOR THE ALMOND-INFUSED MILK:** Keep the almonds warm while the milk is brought to a simmer. Steep the hot toasted almonds in the hot milk for at least 2 hours.
2. Strain the infused milk through a fine-mesh strainer.
3. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Modern Ice Cream Method.
4. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The almonds are only a flavor, not a solids component, and therefore are not part of the formula.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Spice Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

SPICE-INFUSED MILK

3.9 kg / 8 lb 9.57 oz milk

163 g / 5.75 oz cinnamon sticks, toasted and crushed

1 whole nutmeg, toasted and crushed

10 cloves, toasted and crushed

75 g / 2.65 oz ginger, peeled

ICE CREAM BASE

3.68 kg / 8 lb 1.81 oz / 73.61% Spice-Infused Milk

152 g / 5.39 oz / 3.04% milk powder

533 g / 1 lb 2.81 oz / 10.66% sugar

200 g / 7.05 oz / 4% glucose powder

66 g / 2.35 oz / 1.32% trimoline

18 g / .63 oz / .36% Stabilizer-Emulsifier Mix (this page)

350 g / 12.35 oz / 7% egg yolks

1. **FOR THE SPICE-INFUSED MILK:** Bring the milk to a simmer and add the cinnamon, nutmeg, and cloves to the hot milk. Crush the ginger and add it to the milk. Steep for 2 hours.
2. Strain the infused milk through a fine-mesh strainer.
3. Make the ice cream base according to the Modern Ice Cream Method.
4. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The flavors are for steeping only and do not contribute to the balance of the recipe.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Vanilla and Strawberry Jam Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

STRAWBERRY JAM

1 kg / 2 lb 3.27 oz strawberries, washed and stems trimmed

1 kg / 2 lb 3.27 oz sugar

ICE CREAM BASE

2.95 kg / 6 lb 8.06 oz / 73.64% milk

122 g / 4.31 oz / 3.05% milk powder

427 g / 15.05 oz / 10.66% sugar

160 g / 5.64 oz / 4% glucose powder

53 g / 1.88 oz / 1.32% trimoline

14 g / .49 oz / .35% Stabilizer-Emulsifier Mix (page 371)

280 g / 9.88 oz / 7% egg yolks

150 g / 5.29 oz vanilla pods (Tahitian)

1 kg / 2 lb 3.27 oz Strawberry Jam

1. **FOR THE STRAWBERRY JAM:** Cook the strawberries with the sugar over medium-high heat to 108°C / 226°F. If desired, add vanilla pods and other spices to the strawberry jam while it is cooking. Cool to room temperature.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Modern Ice Cream Method.
3. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Layer the jam with the ice cream in alternating layers as the ice cream is extruded from the batch freezer (see Notes). Even out each layer of ice cream and jam with a small offset spatula.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The jam is not added to the ice cream base before churning. The jam is layered with the ice cream in alternating layers as the ice cream is extruded from the batch freezer. For example, 3 layers of ice cream and 2 layers of jam (make sure the bottom, middle, and top layer are ice cream, with 2 layers of strawberry jam between them).

The formula has the same proportions of the framework recipe base (with the exception of the vanilla pods) based on 4 kg / 8 lb 13.09 oz of base. The 1 kg / 2 lb 3.27 oz of jam makes the formula yield a total desired yield of 5 kg / 11 lb .36 oz.

The vanilla pods are split and scraped and steeped into the milk and cream, and, for maximum flavor infusion, they are removed once the base is finished. The amount was not added to the total weight of the recipe because the vanilla pods will be removed (they are a flavor only, not a solid component).

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Stracciatella Ice Cream (Italian Chocolate Chip Ice Cream)

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.31 kg / 7 lb 4.75 oz / 73.56% milk

138 g / 4.87 oz / 3.07% milk powder

480 g / 16.93 oz / 10.67% sugar

180 g / 6.35 oz / 4% glucose powder

60 g / 2.12 oz / 1.3% trimoline

16 g / .56 oz / .35% Stabilizer-Emulsifier Mix (page 371)

315 g / 11.11 oz / 7% egg yolks

500 g / 1 lb 1.64 oz / 10% chocolate (74%), melted but cooled

1. Make the ice cream base according to the Modern Ice Cream Method.
2. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency. Pour the chocolate into the base while it is still churning in the batch freezer. The optimal temperature of the base at this point is -5.55°C / 22° F.
4. Finish the ice cream base in the batch freezer.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Take the ice cream's temperature while it is churning with a laser thermometer so as to not interrupt the churning process.

This formula has the same proportions as the framework recipe base, but this recipe was calculated for 4.5 kg / 9 lb 14.73 oz of base and with the melted chocolate added it will yield 5 kg / 11 lb .36 oz of ice cream.

Rye Bread Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

RYE-INFUSED MILK

5 kg / 11 lb .37 oz milk

1 kg / 2 lb 3.27 oz warm toasted rye bread

ICE CREAM BASE

3.68 kg / 8 lb 1.81 oz / 73.57% Rye-Infused Milk

153 g / 5.4 oz / 3.06% milk powder

534 g / 1 lb 2.84 oz / 10.68% sugar

200 g / 7.05 oz / 4% glucose powder

67 g / 2.36 oz / 1.34% trimoline

18 g / .64 oz / .36% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

1. **FOR THE RYE INFUSED MILK:** Bring the milk to a simmer. Steep the rye bread in the milk for 10 minutes; strain the infused milk through a fine-mesh strainer.
2. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Modern Ice Cream Method.
3. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Marzipan Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.18 kg / 7 lb .17 oz / 63.59% milk

153 g / 5.39 oz / 3.06% milk powder

533 g / 18.81 oz / 10.67% sugar

200 g / 7.05 oz / 4% glucose powder

67 g / 2.35 oz / 1.33% trimoline

18 g / .64 oz / .35% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

500 g / 1 lb 1.64 oz / 10% almond paste (50% nuts)

1. Make the ice cream base according to the Modern Ice Cream Method. Add the almond paste (broken up in pieces) while the ice cream base is still hot. Whisk thoroughly to completely incorporate the almond paste solubles.
2. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Use an almond paste that is 50 percent nuts. Higher percentages are good too, but the fat and solids content in the recipe will have to be adjusted.

In this case, the almond paste used is 27.74 percent fat and 14.08 percent water (all soluble and an integral part of the recipe formulation); the solids percentage is 85.92 percent. 36.25 percent of the total weight is sugar (also soluble). 31 percent of the total solids are almonds that will not be a part of the recipe, since they will be left behind once the base is strained. It is because of this that the recipe has been formulated to exclude 31 percent from the 85.92 percent of the almond paste solids out of the "total solids weight (without fat)" amount.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Thyme Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

THYME-INFUSED MILK

4 kg / 8 lb 13.09 oz milk

1.75 bunches thyme

ICE CREAM BASE

3.68 kg / 8 lb 1.81 oz / 73.59% Thyme-Infused Milk

153 g / 5.4 oz / 3.06% milk powder

533 g / 1 lb 2.81 oz / 10.67% sugar

200 g / 7.05 oz / 4% glucose powder

67 g / 2.36 oz / 1.33% trimoline

18 g / .64 oz / .35% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

1. **FOR THE THYME INFUSED MILK:** Bring the milk to a simmer. Steep the thyme in the milk for 10 minutes (any longer will make the base taste bitter).
2. Once the thyme has steeped in the milk, strain the infused milk through a fine-mesh strainer.
3. **FOR THE ICE CREAM BASE:** Make the ice cream base according to the Modern Ice Cream Method.
4. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Chocolate-Lemon Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

10 lemons, zest only

3.29 kg / 7 lb 4.05 oz / 65.81% milk

138 g / 4.87 oz / 2.76% milk powder

463 g / 16.33 oz / 9.26% sugar

180 g / 6.35 oz / 3.6% glucose powder

60 g / 2.12 oz / 1.2% trimoline

18 g / .64 oz / .36% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

500 g / 1 lb 1.64 oz / 10% dark chocolate (66%), finely chopped

1. Zest the lemons directly into the pot in which the base will be cooked in order to trap all of their oils.
2. Make the ice cream base according to the Modern Ice Cream Method. Whisk the chocolate thoroughly into the base while the base is still hot so that it will melt completely.
3. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The total amount of sugar equals 14.06 percent and not 16 percent because the chocolate added to the base makes up for the lowered sugar in the formula.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Cajeta Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.68 kg / 8 lb 1.81 oz / 73.59% goat's milk

800 g / 1 lb 2.81 oz / 16% sugar

153 g / 5.4 oz / 3.06% milk powder

18 g / .64 oz / .36% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

1. Bring the goat's milk up to a simmer.
2. Cook the sugar using the dry method over high heat until dark amber in color, or about 170°C / 338°F. Turn off the heat. Add the hot goat's milk slowly while stirring with a long whisk. Cool over an ice bath.
3. Make the ice cream base according to the Modern Ice Cream Method.
4. Strain the base through a fine-mesh strainer and cool the base over an ice bath. Age the base under refrigeration overnight.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Cajeta is the Mexican version of caramel, made with goat's milk instead of heavy cream.

For the purpose of this formula, the trimoline and powdered glucose have been removed so that the granulated sugar may be made into cajeta.

If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Grand Marnier Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.3 kg / 7 lb 4.4 oz / 66% milk

153 g / 5.4 oz / 3.06% milk powder

535 g / 1 lb 2.87 oz / 10.72% sugar

200 g / 7.05 oz / 4% glucose powder

67 g / 2.36 oz / 1.34% trimoline

18 g / .64 oz / .36% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

375 g / 13.23 oz / 7.5% Grand Marnier

1. Make the ice cream base according to the Modern Ice Cream Method.
2. Strain the base through a fine-mesh strainer. Cool over an ice bath.
3. Add the Grand Marnier once the base has cooled. If desired, it can be added when the base is hot, but this will cause much of the alcohol to evaporate. Whisk thoroughly to completely incorporate the Grand Marnier. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Rum Ice Cream

YIELD 5 KG / 11 LB .36 OZ BASE

ICE CREAM BASE

3.3 kg / 7 lb 4.4 oz / 66% milk

153 g / 5.4 oz / 3.06% milk powder

535 g / 1 lb 2.87 oz / 10.72% sugar

200 g / 7.05 oz / 4% glucose powder

67 g / 2.36 oz / 1.34% trimoline

18 g / .64 oz / .36% Stabilizer-Emulsifier Mix (page 371)

350 g / 12.35 oz / 7% egg yolks

375 g / 13.23 oz / 7.5% dark rum

1. Make the ice cream base according to the Modern Ice Cream Method.
2. Strain the base through a fine-mesh strainer. Cool the base over an ice bath.
3. Add the rum once the base has cooled. If desired, it can be added when the base is hot, but this will cause much of the alcohol to evaporate. Whisk thoroughly to completely incorporate the rum. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the ice cream can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

SORBETS

Classic Method Sorbets

The sorbets made with this method are perhaps the simplest in this book, since they contain very few ingredients. For this reason, though, they need to be properly balanced. Always keep in mind the following recommended percentages:

INGREDIENT	MINIMUM	MAXIMUM
Fruit purée (sweet fruit)	40% total weight	60% total weight
Fruit purée or juice (acidic fruit)	25% total weight	40% total weight
Dry extracts (fruit solids plus sugar and powdered glucose)	31%	36%
Stabilizer (if used)	0%	1% total weight
Percentage of sugar (or Brix)	25% (or 25° Brix)	32% (or 32° Brix)

The recipes were made based on the *average* amount of sugar (if applicable, as some ingredients contain no sugar) and solids found in the main flavoring. This is important to remember especially for fruit (or vegetable) sorbets, since their sugar and solids content can vary from fruit to fruit (or vegetable to vegetable). Always check that the Brix degrees in the finished base are within range by using a refractometer, and add or subtract the simple syrup as necessary. The simple syrup used for these recipes was based on a simple syrup at 50° Brix (equal parts sugar and water by weight).

It is highly recommended that these sorbets be pacotized to ensure a smooth texture. They are the simplest form of sorbet, but also the most susceptible to damage and decay during service, even if great care is taken. In many instances, even though the recipe is properly balanced, there is some syrup separation, which occurs in many sorbet bases that contain very few solids. In sorbet bases that contain little sugar, there will be large ice crystal formation as a result (remember that sugar depresses the freezing point of water, and the smaller the amount of sugar, the more the water content is susceptible to freezing). Many of these recipes are for savory items, which translate to a lower sugar content that will affect freezing temperatures and ice crystal formation. The Pacojet is ideal for this method, since the bases can be pacotized to order. If a Pacojet is not available, churn small amounts of these savory bases during service, but plan accordingly since time for hardening must be allowed. If the results are unsatisfactory, or a Pacojet is unavailable, try making the sorbet with Modern methods #2 or #3 (see pages 387 and 390).

Try adding .5 g / .02 oz of salt per liter of base to enhance flavors; do not include this amount in the formulation because it is minimal and it will impact only flavor.

Method #1 Classic Sorbet (Refractometer Method)

1. Place the juice, purée, infusion, or other liquid in a stainless steel bowl. This main liquid should be free of solid particles and previously strained through a fine-mesh strainer.
2. If the main liquid was refrigerated, remember to temper it to 20°C / 68°F. To temper the main liquid, place the bowl in a larger bowl that is filled halfway with warm water at 40°C / 104°F. Stir until the main liquid reaches 20°C / 68°F.
3. Pour in some simple syrup (at 20°C / 68°F as well) and whisk together. The simple syrup amount should be the equivalent of 20 percent of the weight of the main liquid.
4. Take a reading with the refractometer. If the refractometer reads below 25, add more simple syrup. If the desired Brix is exceeded, simply add more of the main liquid. Acidic or bitter liquids will require more simple syrup than "sweeter" ones, unless a more savory result is preferred.
5. Once the desired Brix is achieved, the sorbet base can be refrigerated (for up to 3 days in most cases) or churned. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
6. Churn the sorbet base and transfer to a –10°C / 14°F freezer.
7. Let the sorbet harden in the freezer for 2 to 4 hours before serving. Reserve for service.

Matcha Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

2 kg / 4 lb 6.55 oz / 40% matcha tea

3 kg / 6 lb 9.82 oz / 60% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Whisk thoroughly before churning.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Matcha is a green tea powder made from green tea leaves raised in the shade. The tea leaves are steamed, dried, and ground into powder. The powder usually has a bright green color.

To make the matcha tea, use 10 percent matcha powder and 90 percent water. Simply dissolve the tea into the water. The water should be hot, but not boiling.

If using a batch freezer, make sure to stir the sorbet base well before churning. If using a Pacojet, pacotize the entire beaker because the tea solids will settle at the bottom of the beaker.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Yuzu Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

1.95 kg / 4 lb 4.78 oz / 39% yuzu juice

3.05 kg / 6 lb 11.58 oz / 61% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Yuzu is an Asian citrus fruit with a very tart flavor, as tart as limes. Its flavor is reminiscent of a very floral grapefruit and a Meyer lemon.

Fresh Yuzu is very hard to get in the United States, but its juice is easily available (expensive, but available).

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Kumquat Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

KUMQUAT PURÉE

2.63 kg / 5 lb 12.77 oz kumquats

3 kg / 6 lb 9.82 oz water

SORBET BASE

2 kg / 4 lb 6.55 oz / 40% Kumquat Purée

3 kg / 6 lb 9.82 oz / 60% simple syrup (50° Brix)

1. **FOR THE KUMQUAT PURÉE:** Cut the kumquats in half, trim the tops and bottoms off, and take the seeds out; place in a large pot and cover with the water. Bring the water up to a boil, strain, and repeat 2 more times with fresh water. This will get rid of any bitter flavors.
2. Purée the blanched kumquats until smooth and pass through a fine-mesh strainer.
3. **FOR THE SORBET BASE:** Combine the purée with the simple syrup and cool over an ice bath.
4. Make the sorbet according to the Classic Sorbet Method.
5. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Quince Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

QUINCE PURÉE

3.5 kg / 7 lb 11.46 oz quince, peeled and cored

3 kg / 6 lb 9.82 oz water

300 g / 10.58 oz Ruby Sippers tea

25 g / .88 oz orange peels

500 g / 1 lb 1.64 oz sugar

SORBET BASE

2.1 kg / 4 lb 10.07 oz / 42% Quince Purée

2.9 kg / 6 lb 6.29 oz / 58% simple syrup (50° Brix)

1. **FOR THE QUINCE PURÉE:** Place the quince in a pot and cover with water. Add the tea, the orange peel, and the sugar.
2. Poach the quince until tender over medium heat (do not boil), about 1 hour.
3. Drain the poached quince and purée thoroughly in a blender. Do not strain the purée through a fine-mesh strainer.
4. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
5. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Verjus Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

1.95 kg / 4 lb 4.78 oz / 39% verjus

3.05 kg / 6 lb 11.58 oz / 61% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Once the base has aged, churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Verjus is the tart juice of unripe wine grapes. It is available in red and white varieties. Its flavor is reminiscent of vinegar.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Passion Fruit Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

2.35 kg / 5 lb 2.89 oz / 47% passion fruit juice

2.65 kg / 5 lb 13.47 oz / 53% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Pacotize or churn to the desired consistency. If pacotizing the base, freeze in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If using passion fruit concentrate, use equal parts passion fruit purée and orange juice or water.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Cava Sorbet

YIELD 5 KG / 1 LB .36 OZ BASE

2 kg / 4 lb 6.55 oz / 40% cava

3 kg / 6 lb 9.82 oz / 60% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Cava is a Spanish sparkling white wine similar to Champagne.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Concord Grape Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

CONCORD GRAPE JUICE

6 kg / 13 lb 3.64 oz Concord grapes

400 g / 14.11 oz water

SORBET BASE

2.8 kg / 6 lb 2.77 oz / 56% Concord Grape Juice

2.2 kg / 4 lb 13.6 oz / 44% simple syrup (50° Brix)

1. **FOR THE CONCORD GRAPE JUICE:** Separate the grapes from the stems.
2. Place the grapes in a pot and add the water; cook until the grapes burst and release their juice.
3. Push the grapes through a conical strainer so as to obtain as much liquid and pulp as possible while leaving the seeds and skin in the china cap.
4. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
5. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Lemon Verbena Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

LEMON VERBENA INFUSION

2.4 kg / 5 lb 4.66 oz lemon juice

400 g / 14.11 oz lemon verbena

SORBET BASE

2 kg / 4 lb 6.55 oz / 40% Lemon Verbena Infusion

3 kg / 6 lb 8.82 oz / 60% simple syrup (50° Brix)

1. **FOR THE LEMON VERBENA INFUSION:** Warm the lemon juice slightly and steep the lemon verbena in the lemon juice. Do not let the juice get hotter than 65°C / 149°F, otherwise the verbena's flavor will become bitter. Steep for 5 minutes.
2. Once the lemon verbena is steeped, strain it out and measure the amount of lemon juice needed.
3. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
4. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Granny Smith Apple and Fennel Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

GRANNY SMITH APPLE JUICE

10 kg / 22 lb 1.3 oz Granny Smith apples

20 g / .71 oz ascorbic acid

FENNEL JUICE

8 kg / 17 lb 10.18 oz fennel bulb and stems (without fronds)

17 g / .6 oz ascorbic acid

SORBET BASE

1.35 kg / 2 lb 15.62 oz / 27% Granny Smith Apple Juice

950 g / 2 lb 1.51 oz / 19% Fennel Juice

2.7 kg / 5 lb 15.24 oz / 54% simple syrup (50° Brix)

1. **FOR THE APPLE JUICE:** Cut the apples in sixths and pass them through a commercial-grade juicer. Use ascorbic acid (or vitamin C crystals) to prevent oxidation. As the juice pours out of the juicer, put some ascorbic acid (3 to 4 g / .11 to .14 oz per 1 L / 1.04 qt of juice) into the container into which the juice is pouring. Mix thoroughly.
2. Strain the apple juice through a fine-mesh strainer.
3. **FOR THE FENNEL JUICE:** Proceed using the same instructions as for the apples.
4. **FOR THE SORBET BASE:** Combine both juices with the simple syrup.
5. Make the sorbet base according to the Classic Sorbet Method.
6. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
7. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES It is important to work fast so that the apples don't oxidize and turn the sorbet brown. Ideally, the sorbet will be bright green.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Bosc Pear Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

BOSC PEAR PURÉE

3 kg / 6 lb 9.82 oz water

3 kg / 6 lb 9.82 oz sugar

4 Madagascar vanilla beans

6 cinnamon sticks, toasted and crushed

3 kg / 6 lb 9.82 oz peeled and cored ripe Bosc pears

SORBET BASE

2.5 kg / 5 lb 8.18 oz / 50% Bosc Pear Purée

2.5 kg / 5 lb 8.18 oz / 50% simple syrup from the poaching liquid (50° Brix)

1. **FOR THE PEAR PURÉE:** Combine the water, sugar, vanilla beans, and cinnamon sticks. Bring to a boil (to dissolve the sugar and steep the vanilla beans and cinnamon). Add the pears.
2. Turn the heat down to a simmer and poach the pears until they are tender. Keep the pears covered with a clean kitchen towel or cheesecloth for even cooking.
3. Take pears out of the poaching liquid and purée in a blender; do not strain.
4. **FOR THE SORBET BASE:** Measure the simple syrup from the poaching liquid; combine with the pear purée.
5. Make the sorbet base according to the Classic Sorbet Method.
6. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
7. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Raspberry Sorbet #1

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

3.7 kg / 8 lb 2.5 oz / 46% raspberries

2.7 kg / 5 lb 15.24 oz / 54% simple syrup (50° Brix)

1. **FOR THE RASPBERRY PURÉE:** Purée the raspberries in a blender and pass through a fine-mesh strainer. Reserve 2.3 kg / 5 lb 1.13 oz of the puree.
2. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES For the best flavor, only use raspberries when they are in season.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Green Zebra Tomato Sorbet

YIELD 5 KG / 11 LB .63 OZ BASE

GREEN ZEBRA TOMATO WATER

20 kg / 44 lb 4.47 oz ripe Green Zebra tomatoes

200 g / 7.05 oz salt

SORBET BASE

2.6 kg / 5 lb 11.71 oz / 52% Green Zebra Tomato Water

2.4 kg / 5 lb 4.66 oz / 48% simple syrup (50°Brix)

1. **FOR THE TOMATO WATER:** Blend the tomatoes with the salt.
2. Place the puréed tomatoes in a large fine-mesh strainer set over a stainless steel bowl or bain marie and let gravity extract the water from the tomatoes. Some chefs will place cheesecloth inside the strainer to strain all of the solids out, but in this case it is convenient to leave some solids in to properly balance the recipe.
3. Make the sorbet base according to the Classic Sorbet Method.

4. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This sorbet has the minimum recommended Brix, since it is for savory purposes.

The solids percentage is slightly under the minimum recommended percentage. Therefore, it is recommended to use a Pacojet and pacotize the frozen base to order (this will prevent large ice crystals from forming). If using a batch freezer, churn small amounts throughout service.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Interesting fact: Tomatoes contain the following sugars: 1.37 percent fructose and 1.25 percent glucose.

Piquillo Pepper Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

2.73 kg / 6 lb .30 oz / 54.5% piquillo peppers, roasted, stems, skin, and seeds removed

2.27 kg / 5 lb .08 oz / 45.5% simple syrup (50° Brix)

1. Pat the peppers dry with paper towels and purée thoroughly in a blender.
2. Make the sorbet base according to the Classic Sorbet Method.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Piquillo peppers are a Spanish variety of pepper that is about one-third the size of regular bell peppers; they are not available fresh in the United States. Canned Spanish piquillo peppers are usually of very good quality. Most canned piquillo peppers are in olive oil. Their flavor is slightly smoky (since they are charred in order to take their skins off) and sweet.

Padron peppers are another small variety of pepper from Spain, but they are now available in the United States; substitute them for piquillo peppers if desired. Cook them in very hot extra-virgin olive oil until their skin blisters and the flesh is tender. Once they cool, remove the skin and seeds, then purée and pass through a fine-mesh strainer and combine with the simple syrup.

Sugar is at a minimum because this sorbet is used as part of a savory item.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Red Beet Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

BEET JUICE

15 kg / 33 lb 1.1 oz red beets

SORBET BASE

2.3 kg / 5 lb 1.13 oz / 46% Beet Juice

2.7 kg / 5 lb 15.24 oz / 54% simple syrup (50° Brix)

1. **FOR THE BEET JUICE:** Peel the beets and cut into eighths. Pass them through a professional juicer; then pass the juice through a fine-mesh strainer.
2. **FOR THE SORBET BASE:** Make the sorbet according to the Classic Sorbet Method.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The sugar and solids percentages of the beet are based on its liquid form, not its puréed form.

Beet juice has very few solids, therefore to the formula must be adjusted by adding more simple syrup to reach a percentage slightly lower than the minimum recommended (31 percent). Since beets are rather sweet, there is no real flavor compromise even though this sorbet is intended for a savory preparation.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Cucumber and Wasabi Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

CUCUMBER WATER

10 kg / 22 lb .73 oz cucumbers

SORBET BASE

2.55 kg / 5 lb 9.95 oz / 51% Cucumber Water

2.45 kg / 5 lb 6.42 oz / 49% simple syrup (50° Brix)

5 g / .18 oz fresh wasabi

1. **FOR THE CUCUMBER WATER:** Peel and seed the cucumbers, then pass them through a professional juicer. Pass through a fine-mesh strainer after juicing.
2. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
3. Once the sorbet base is made, grate the wasabi (using a rasp) directly into the base. It is not necessary to strain it. If using powdered wasabi, add 10 g / .35 oz directly to the base and whisk thoroughly to completely dissolve the wasabi. In both cases, adjust the amount of wasabi to taste; just keep the customers in mind.
4. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The sugar and solids percentages of the cucumber are based on its liquid form, not its puréed form.

The Brix is at the bare minimum, since this sorbet is intended for a savory item.

The solids percentage is slightly under the minimum recommended percentage. Therefore, it is recommended to use a Pacojet and pacotize the frozen base to order (this will prevent large ice crystals from forming). If using a batch freezer, churn small amounts throughout service.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Carrot Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

2.65 kg / 5 lb 13.47 oz / 53% carrot juice

2.35 kg / 5 lb 2.89 oz / 47% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The solids percentage is slightly under the minimum recommended percentage. Therefore, it is recommended to use a Pacojet and pacotize the frozen base to order (this will prevent large ice crystals from forming). If using a batch freezer, churn small amounts throughout service.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Lime Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

2.35 kg / 5 lb 2.89 oz / 47% lime juice

2.65 kg / 5 lb 13.47 oz / 53% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The solids percentage is slightly under the minimum recommended percentage. Therefore, it is recommended to use a Pacojet and pacotize the frozen base to order (this will prevent large ice crystals from forming). If using a batch freezer, churn small amounts throughout service.

If desired, substitute Key lime juice for the lime juice.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Sake and Lemon Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

1.75 kg / 3 lb 13.73 oz / 35% sake (unfiltered)

500 g / 1 lb 1.64 oz / 10% lemon juice

2.75 kg / 6 lb 1 oz / 55% simple syrup (50° Brix)

1. Make the sorbet base according to the Classic Sorbet Method.
2. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If desired, zest the lemons used for the juice portion directly into the sake, for flavor and some texture.

Using unfiltered sake is recommended because it contains more solids than the filtered kind and will result in a smoother, more uniform sorbet. Use a high-quality sake because otherwise, once it is frozen, its flavor can become too subtle.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Jalapeño Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

JALAPEÑO WATER

10 jalapeños

2.5 kg / 5 lb 8.18 oz bottled water

40 g / 1.41 oz salt

SORBET BASE

2 kg / 4 lb 6.55 oz / 40% Jalapeño Water

3 kg / 6 lb 9.82 oz / 60% simple syrup (50° Brix)

1. **FOR THE JALAPEÑO WATER:** Blend the jalapeños with the water (trim the stems off first, seeding is optional; remember that the seeds are the hottest part of hot peppers) and salt. Pass through a fine-mesh strainer.
2. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The solids percentage is slightly under the minimum recommended percentage. Therefore, it is recommended to use a Pacojet and pacotize the frozen base to order (this will prevent large ice crystals from forming). If using a batch freezer, churn small amounts throughout service.

The Brix is right at 30°, which might make this sorbet on the sweet side, even though it is intended for a savory preparation. However, in that dish, the sorbet is served with raw yellowtail and ponzu sauce, so it will make sense with the "sweetness" of the fish and the pungency of ponzu.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Green Mango Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

15 kg / 33 lb green mangoes

SORBET BASE

2.65 kg / 5 lb 13.47 oz / 53% Green Mango Purée

2.35 kg / 5 lb 2.89 oz / 47% simple syrup (50° Brix)

1. **FOR THE GREEN MANGO PURÉE:** Peel the mangoes and trim the flesh off the large pit, then purée in a blender. Pass the purée through a fine-mesh strainer, since mangoes are very fibrous.
2. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Green mangoes are unripe mangoes. Any variety of them will work for the recipe.

This sorbet is for a savory application, but it has enough solids (from the mangoes) to make it stay smooth.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Papaya Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

PAPAYA PURÉE

5 kg / 1 lb papayas

SORBET BASE

2.9 kg / 6 lb 6.28 oz / 58% Papaya Purée

50 g / 1.76 oz / 1% lime juice

2.05 kg / 4 lb 8.31 oz / 41% simple syrup (50° Brix)

1. **FOR THE PAPAYA PURÉE:** Remove the skin from the papaya with a knife, cut in half and remove the seeds, then purée in a blender. If desired, add some lime juice while the papaya is blending to enhance and sharpen its flavor.
2. **FOR THE SORBET BASE:** Make the sorbet base according to the Classic Sorbet Method.
3. Pacotize or churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Any variety of papaya will work for the recipe, but use only the ripest possible papayas for the best flavor.

This sorbet is for a savory application, but it has enough solids (from the papayas) to make it stay smooth.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Method #2: Modern Sorbet Method (Sorbet Syrup Method)

All of the following recipes are made with manufactured purées. Keep in mind that these kinds of purées contain, on average, an added 10 percent of sugar by weight. It is entirely possible to make these sorbets with fresh fruit, by reducing the sugar in the formula by 10 percent and adjusting the solids percentage and water percentage based on the fruit chart on page 410.

Make sure to review the method before beginning. A batch of Sorbet Syrup (below) will need to be made first.

Sorbet Syrup

INGREDIENT	AMOUNT (IN GRAMS)	% OF TOTAL RECIPE	WATER	SOLIDS
Sugar	4203 g	42.03%	0	4203 (100%)
Sorbet Stabilizer Mix (see below)	69 g	.69%	0	69 (100%)
Water	3910 g	39.1%	3910 (100%)	0
Glucose powder	1818 g	18.18%	90.9 (5%)	1727.1 (95%)
Total	10 kg	100%	4000.9 g (40.01%)	5999.1 g (59.99%)

1. Combine 10 percent of the sugar with the Sorbet Stabilizer Mix and mix thoroughly.
2. Place the water, remaining sugar and glucose powder, in a pot over high heat. Stir constantly using a whisk.
3. When the mix reaches 40°C / 104°F, slowly pour in the sorbet stabilizer and sugar mixture while stirring. If the mixture is poured in too quickly, the stabilizer will clump up and will not work.
4. Continue stirring until the mixture reaches 85°C / 185°F. At this temperature the stabilizers will fully hydrate and the sugars will dissolve completely.
5. Take the pot off the heat and transfer the liquid mix to an ice bath. Let the mix cool down completely before it is added to the main ingredient.
6. Once the sorbet mix has been combined with the main ingredient and water, let the mix "mature" or age for 2 hours minimum, 6 hours being ideal. This will give the stabilizers and sugars time to bind with the main ingredient and produce a high-quality sorbet.
7. Churn the sorbet base and transfer to a –10°C / 14°F freezer.
8. Let the sorbet harden for 2 to 4 hours before serving. Reserve for service.

If using this sorbet mix instead of simple syrup for method #1, use a refractometer to determine the correct amount of syrup (Brix between 25 and 32°).

The recommended machine to use is a batch freezer, since there are stabilizers present. A Pacojet will also turn out an excellent product, with the added benefit of pacotizing as many beakers as needed before service without having to do so at different times during the day, because the stabilizers will maintain the sorbet's integrity.

Sorbet Stabilizer Mix

275 g / 9.7 oz gelatin powder

175 g / 6.17 oz CMC (carboxymethyl cellulose)

250 g / 8.82 oz locust bean gum

250 g / 8.82 oz guar gum

Mix all of the ingredients together thoroughly.

Method #2: Sorbet Syrup Method Recipes

The following table is a compilation of recipes for this particular method that are based upon the most commonly used fruits. If the fruit that you are looking for is not here, use its closest equivalent based on sugar content and solids (see Average Sugar, Solids, and Acid Content of Fruit table on page 410).

All recipes yield 5000 g / 11 lb .37 oz; all amounts are in grams.

FRUIT TYPE	PURÉE AMOUNT	SORBET SYRUP	WATER
Apricot	2950 g / 6 lb 8.06 oz	1740 g / 3 lb 13.38 oz	310 g / 10.93 oz
Banana	3050 g / 6 lb 11.58 oz	1605 g / 3 lb 8.61 oz	345 g / 12.17 oz
Blackberry	2840 g / 6 lb 4.18 oz	1506 g / 3 lb 5.12 oz	653 g / 1 lb 7.03 oz
Black currant (cassis)	2290 g / 5 lb .78 oz	2140 g / 4 lb 11.49 oz	571 g / 1 lb 4.14 oz
Blueberry	2273 g / 5 lb .18 oz	2091 g / 4 lb 9.76 oz	636 g / 1 lb 6.43 oz
Cherry	2428 g / 5 lb 5.64 oz	1286 g / 2 lb 13.36 oz	1286 g / 2 lb 13.36 oz
Coconut	2223 g / 4 lb 14.41 oz	1778 g / 3 lb 14.72 oz	1000 g / 2 lb 3.27 oz
Granny Smith apple	2128 g / 4 lb 11.06 oz	1436 g / 3 lb 2.65 oz	1436 g / 3 lb 2.65 oz
Grapefruit	3401.5 g / 7 lb 7.98 oz	1599 g / 3 lb 8.4 oz	0 g
Guava	3279 g / 7 lb 3.66 oz	1361 g / 3 lb	361 g / 12.73 oz
Kiwi	2763 g / 6 lb 1.46 oz	1630 g / 3 lb 9.5 oz	608 g / 1 lb 5.45 oz
Lemon	1690 g / 3 lb/11.61 oz	3311 g / 7 lb 4.79 oz	0 g
Lime	1349 g / 2 lb 15.58 oz	3133 g / 6 lb 14.51 oz	519 g / 1 lb 2.31 oz
Litchi	2428 g / 5 lb 5.64 oz	1286 g / 2 lb 13.36 oz	1286 g / 2 lb 13.36 oz
Mandarin	3402 g / 7 lb 8 oz	1599 g / 3 lb 8.4 oz	0 g
Mango	3097 g / 6 lb 13.24 oz	1285 g / 2 lb 13.33 oz	619 g / 1 lb 5.18 oz
Melon	3280 g / 7 lb 3.7 oz	1475 g / 3 lb 4.03 oz	246 g / 8.68 oz
Papaya	3097 g / 6 lb 13.24 oz	1285 g / 2 lb 13.32 oz	619 g / 1 lb 5.18 oz
Passion fruit	1786 g / 3 lb 15 oz	1607 g / 3 lb 8.68 oz	1607 g / 3 lb 8.68 oz
Peach (white)	3227 g / 7 lb 1.83 oz	1613 g / 3 lb 8.9 oz	161 g / 5.68 oz
Pear (William)	2977 g / 6 lb 9 oz	1577 g / 3 lb 7.63 oz	446 g / 15.73 oz
Pineapple	2428 g / 5 lb 5.64 oz	1286 g / 2 lb 12.72 oz	1286 g / 2 lb 12.72 oz
Raspberry	2842 g / 6 lb 4.25 oz	1506 g / 3 lb 5.12 oz	653 g / 1 lb 7.03 oz

Coconut-Lime Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

2.22 kg / 4 lb 14.3 oz / 44.4% coconut purée

5 limes, zest only

1 kg / 2 lb 3.27 oz / 20% water

1.78 kg / 3 lb 14.79 oz / 35.6% Sorbet Syrup (page 387)

1. Combine the coconut purée with the lime zest, then mix with the other ingredients. Make sure to zest the limes directly into the coconut purée to obtain the most flavor.
2. Make the sorbet base according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Passion Fruit Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

1.77 kg / 3 lb 14.43 oz / 35.47% passion fruit purée

1.61 kg / 3 lb 8.79 oz / 32.26% water

1.61 kg / 3 lb 8.79 oz / 32.26% Sorbet Syrup (page 387)

1. Make the sorbet base according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This recipe is used for the Hot Coconut Rum Colada and Passion Fruit Shake (there is also a passion fruit sorbet recipe using the Classic Sorbet Method on page 378).

Many manufactured passion fruit purées (juices, really) are sold as concentrates. Make sure to check before making the sorbet base. If in fact it is a concentrate, use equal parts passion fruit juice and orange juice for the total weight of required passion fruit juice. This will not take away from its flavor, it will simply smooth out the tart flavor of the passion fruit.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Raspberry Sorbet #2

YIELD 5 KG / 11 LB .36 OZ BASE

2.84 kg / 6 lb 4.18 oz / 56.77% raspberry purée

653 g / 1 lb 7.03 oz / 13.05% water

1.51 kg / 3 lb 5.26 oz / 30.18% Sorbet Syrup (page 387)

1. Make the sorbet base according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency. If using a Pacojet, freeze the base in a beaker until hardened, and then pacotize.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Method #3: Modern Sorbet Method (Mathematical Formulation Sorbet)

Review the formulation instructions on page 377.

The amount of sugar added does not always represent Brix degrees, since the sugar present in the fruit (in the case of fruit sorbets or others where the ingredient may contain sugar) needs to be considered to determine the sorbet's sugar density.

A batch freezer is recommended for this method because of the presence of stabilizers.

Always keep in mind the following recommended maximum and minimum percentages of ingredients in order to have a well-balanced recipe (they apply to any sorbet base).

Minimum and Maximum Percentages

INGREDIENT	MINIMUM	MAXIMUM
Fruit purée (sweet fruit)	40% total weight	60% total weight
Fruit purée or juice (acidic fruit)	25% total weight	40% total weight
Dry extracts (fruit solids plus sugar and powdered glucose if used)	31%	36%
Stabilizer (if used; see below)	0%	1% of total weight
Sugar percentage (or Brix): When using powdered glucose, 4% of the total weight is the recommended amount.	25% (or 25° Brix)	32% (or 32° Brix)

1. Determine the formula (see page 377).
2. Scale all the ingredients accurately.
3. Combine all of the dry ingredients in a bowl.
4. Place the water in a pot over high heat and bring it up to 40°C / 104°F. If infusing a liquid, do so at this time. Steep (according to the steeping instructions on page 27), strain, and then bring it back to temperature (40°C / 104°F). Proceed.
5. Once the liquid reaches 40°C / 104°F, pour in the dry ingredients carefully but quickly while whisking constantly.
6. Bring the mixture up to 85°C / 185°F and maintain at this temperature for 2 minutes (turn off the heat if necessary). This will allow the stabilizers to fully hydrate and all the dry ingredients to dissolve. Do not exceed heating time and/or temperature in order to prevent too much liquid evaporation, as that would alter the formula.
7. Chill the mixture down to 4°C / 39°F.
8. Mix in the main ingredient (flavor).
9. Let the sorbet base mature for at least 2 hours and ideally 6 hours.
10. Churn the sorbet base and transfer to a -10°C / 14°F freezer. The recommended machine to use is a batch freezer, since there are stabilizers present. A Pacojet will also turn out an excellent product, with the added benefit of pacotizing as many beakers as needed before service without having to do so at different times during the day, because the stabilizers will maintain the sorbet's integrity.
11. Let the sorbet harden for 2 to 4 hours before serving. Reserve for service.

Sorbet Stabilizer Mix

275 g / 9.7 oz gelatin powder

175 g / 6.17 oz CMC (carboxymethyl cellulose)

250 g / 8.82 oz locust bean gum

250 g / 8.82 oz guar gum

Mix all of the ingredients together thoroughly.

Lemon Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

1.4 kg / 3 lb 1.38 oz / 27.96% lemon juice
250 g / 8.82 oz / 4.99% glucose powder
1.31 kg / 2 lb 14.21 oz / 26.16% granulated sugar
18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)
2.03 kg / 4 lb 7.61 oz / 40.54% water

1. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Raspberry Sorbet #3

YIELD 5 KG / 11 LB .36 OZ BASE

2.65 kg / 5 lb 13.47 oz / 53.04% raspberry purée
250 g / 8.82 oz / 5% glucose powder
1.11 kg / 2 lb 7.15 oz / 22.21% sugar
15 g / .53 oz / .3% Sorbet Stabilizer Mix (page 390)
971 g / 2 lb 2.25 oz / 19.43% water

1. Make the sorbet base according to the Method #3 Modern Sorbet Method.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This particular recipe is to be used with the Raspberry Sorbet and Marzipan Ice Cream Terrine (page 287). Sorbets made with this method are typically better suited for this type of freezing (as a solid tube), since they won't harden or crystallize as much as a sorbet made using the Classic Method.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Blood Orange Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

1.75 kg / 3 lb 13.73 oz / 34.94% blood orange juice
250 g / 8.82 oz / 4.99% glucose powder
1.11 kg / 2 lb 7.15 oz / 22.16% sugar
18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)
1.88 kg / 4 lb 2.31 oz / 37.54% water

1. Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If desired, replace the blood orange juice with regular orange juice.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Grapefruit Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

1.75 kg / 3 lb 13.73 oz / 34.94% grapefruit juice
250 g / 8.82 oz / 4.99% glucose powder
1.26 kg / 2 lb 12.44 oz / 25.16% sugar
18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)
1.73 kg / 3 lb 13.02 oz / 34.54% water

1. Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This recipe works with any kind of grapefruit.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Granny Smith Apple and Wasabi Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

GRANNY SMITH APPLE JUICE

8 kg / 17 lb 10.2 oz Granny Smith apples

16 g / .56 oz ascorbic acid

SORBET BASE

1.75 kg / 3 lb 13.73 oz / 34.93% Granny Smith Apple Juice

250 g / 8.82 oz / 4.99% glucose powder

1.17 kg / 2 lb 9.27 oz / 23.35% sugar

25 g / .88 oz / .5% Sorbet Stabilizer Mix (page 390)

1.81 kg / 3 lb 15.84 oz / 36.12% water

5 g / .18 oz / .01% wasabi

1. **FOR THE APPLE JUICE:** It is important to work fast so that the apples don't oxidize and turn the sorbet brown. Ideally, the sorbet will be a bright green. Cut the apples in sixths and pass them through a professional juicer. As the juice pours out of the juicer, put some ascorbic acid (3 to 4 g / .11 to .14 oz per 1 L / 1.04 qt of juice) into the container into which the juice is pouring to prevent oxidation. Mix thoroughly.
2. Pass the juice through a fine-mesh strainer.
3. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
4. Once the sorbet base is made, grate the wasabi (using a rasp) directly into the base. It is not necessary to strain it. If using powdered wasabi, add 10 g / .35 oz directly to the base and stir well to dissolve. In both cases, adjust the amount of wasabi to taste; just keep the customers in mind.
5. Once the base has aged, churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Unripened apple juice can be substituted for the Granny Smith Apple Juice.

The sugar and solids percentages of the fruit were based on its liquid form, not its purée form.

This flavor was inspired by one of Paul Liebrandt's appetizers while he was the chef at Atlas (now closed) in NYC, in which he served this sorbet with oysters.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Spiced Dolcetto Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SPICED DOLCETTO WINE

2.5 kg / 5 lb 8.18 oz dolcetto wine

125 g / 4.41 oz cinnamon sticks, toasted and crushed

8 cloves, toasted and crushed

½ nutmeg, toasted and crushed

3 orange peels

SORBET BASE

2 kg / 4 lb 6.55 oz / 40% Spiced Dolcetto Wine

250 g / 8.82 oz / 5% glucose powder

1.32 kg / 2 lb 14.56 oz / 26.41% sugar

18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)

1.41 kg / 3 lb 1.74 oz / 28.21% water

1. **FOR THE SPICED WINE:** Bring the wine to a simmer. Steep the wine with the spices and orange peel for 45 minutes with the heat turned off and the pot covered with plastic wrap to prevent evaporation. Once the wine has been infused, strain, weigh out the amount needed, and let it cool.
2. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Cranberry Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

2.75 kg / 6 lb 1 oz / 55% cranberry purée

50 g / 1.76 oz / 1% glucose powder

1.29 kg / 2 lb 13.5 oz / 25.81% sugar

18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)

890 g / 1 lb 15.39 oz / 17.8% water

1. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The Brix in this recipe is at 29°, which seems low, but cranberries contain a high amount of pectin that will help stabilize the sorbet and also provide a smooth texture. Besides, cranberries are naturally tart, and a cranberry sorbet that is too sweet will not do the fruit justice.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Pomegranate Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

2 kg / 4 lb 6.55 oz / 40% pomegranate juice

250 g / 8.82 oz / 5% glucose powder

1.1 kg / 2 lb 6.8 oz / 22% sugar

18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)

1.63 kg / 3 lb 9.5 oz / 32.61% water

1. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES To obtain the pomegranate's juice without the seeds, crush the seeds through a china cap. This will make the seeds burst. Store-bought juice can also be substituted.

The solids and sugar percentages for the pomegranate were based on the juice alone (the seeds were not considered).

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Grapefruit and Mint Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

1.75 kg / 3 lb 13.73 oz / 34.94% grapefruit juice

250 g / 8.82 oz / 4.99% glucose powder

1.26 kg / 2 lb 12.44 oz / 25.16% sugar

18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)

1.73 kg / 3 lb 13.02 oz / 34.54% water

30 mint leaves, cut into chiffonade

1. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency. Add the mint to the base as it is churning and once it has reached −5.5°C / 22°F.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer. If pacotizing, stir the mint chiffonade into the base after it has been shaved.

Litchi Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

2.85 kg / 6 lb 4.53 oz / 56.97% litchi purée
250 g / 8.82 oz / 4.99% glucose powder
855 g / 1 lb 14.16 oz / 17.09% sugar
18 g / .64 oz / .36% Sorbet Stabilizer Mix (page 390)
1.03 kg / 2 lb 4.33 oz / 20.59% water

1. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTE If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

UNIQUE SORBETS

The following recipes are categorized under "unique" sorbets because they use uncommon ingredients that make the formulation a little more challenging (for example, there is a sorbet with a liquid fat: olive oil); they are meant to show that almost anything is possible if the formula is used properly. The procedure and rules for the Method #3 Modern Sorbet Method still apply.

Milk Chocolate Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

121 g / 4.27 oz / 2.42% sugar
20 g / .71 oz / .4% Sorbet Stabilizer Mix (page 390)
3.04 kg / 6 lb 11.23 oz / 60.7% water
607 g / 1 lb 5.41 oz / 12.12% trimoline
1.22 kg / 2 lb 11.03 oz / 24.36% milk chocolate (40%), finely chopped

1. Combine the granulated sugar and stabilizer; mix well.
2. Combine the water and trimoline; heat to 40°C / 104°F.
3. Pour the sugar-stabilizer mix into the water-trimoline mix while whisking vigorously.
4. Heat the liquid to 85°C / 185°F and pour over the chocolate; blend together with a beurre mixer.
5. Cool down, then let mature for at least 2 hours before churning.
6. Once the base has aged, churn to the desired consistency.
7. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES If desired, substitute any chocolate for the milk chocolate above its percentage, including bitter chocolates.

A batch freezer is recommended for this recipe.

Extra-Virgin Olive Oil Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

SORBET BASE

500 g / 1 lb 1.64 oz / 10% extra-virgin olive oil

250 g / 8.82 oz / 5% glucose powder

1.25 kg / 2 lb 12.09 oz / 24.97% sugar

25 g / .88 oz / .5% Stabilizer (80% Sorbet Stabilizer Mix (page 390) + 20% xanthan gum)

2.98 kg / 6 lb 9.11 oz / 59.54% water

1. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This sorbet is made using Method #3, but uses a Pacojet because of low sugar and high fat content.

This sorbet is included as an example of an "exception to the rule," because this sorbet contains a high amount of fat (extra-virgin olive oil) and will require the addition of an emulsifier (xanthan gum). The amount of stabilizer is a mixture of the normal sorbet stabilizers (80%) plus xanthan gum (20%). It is incorporated into the recipe as with other stabilizers.

Use a high-quality extra-virgin olive oil, preferably recently pressed and on the fruity side.

If pacotizing the base, the sorbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Peppermint "Patty" Sorbet

YIELD 5 KG / 11 LB .36 OZ BASE

PEPPERMINT INFUSED WATER

3.6 kg / 7 lb 14.98 oz water

4 bunches fresh peppermint

SORBET BASE

3.4 kg / 7 lb 7.93 oz / 67.93% Peppermint Infused Water

250 g / 8.82 oz / 5% glucose powder

1.33 kg / 2 lb 14.91 oz / 26.57% sugar

25 g / .88 oz / .5% Sorbet Stabilizer Mix (page 390)

1 g / .035 oz / 0.02% natural peppermint extract, or as needed

1. **FOR THE PEPPERMINT INFUSED WATER:** Bring the water to a boil, add the peppermint, and turn off the heat. Let the leaves steep for 3 minutes, stirring constantly. Don't let the peppermint stay in the hot water too long, or the water will turn brown (because the peppermint will oxidize) and the flavor will become bitter.
2. Strain the leaves out and cool the water to 40°C / 104°F.
3. **FOR THE SORBET BASE:** Make the sorbet base according to the Method #3 Modern Sorbet Method. Cool over an ice bath. Age the base under refrigeration overnight.
4. Add the peppermint extract once the base has aged. Add to taste, keeping in mind that flavors dim as they get colder.
5. Churn to the desired consistency.
6. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This recipe has 2 characteristics that make it different: It has no purée, juice, or other liquid added, and the water is infused with peppermint with the addition of a small amount of peppermint extract.

A batch freezer is recommended for this recipe.

SHERBETS

Sherbet Base Recipe

Make sure to review the Method #2 Sorbet Syrup Method (page 387) before beginning. A batch of Sorbet Syrup will need to be made first.

INGREDIENT	AMOUNT	% IN TOTAL RECIPE	FAT	WATER	SERUM	NONFAT SOLIDS
Milk (2%)	3600 g	72	70.92 g (1.97%)	3215.88 g (89.33%)	384.12 g (10.67%)	313.2 g (8.7%)
Sorbet Syrup	1400 g	28	0 g	560.14 g (40.01%)	0 g	839.86 g (59.99%)
Flavor	0 g	0	0 g	0 g	0 g	0 g

NOTE: The formula is in range for sweetening strength because 839.86 g / 1 lb 13.63 oz of the sorbet syrup is considered sweetening strength, which is 16.79 percent of the total weight of the formula.

Buttermilk Sherbet

YIELD 5 KG / 11 LB .36 OZ BASE

SHERBET BASE

2.6 kg / 5 lb 11.71 oz / 52% buttermilk (1% milk fat)

950 g / 2 lb 1.51 oz / 19% milk

1.45 kg / 3 lb 3.15 oz / 29% Sorbet Syrup (page 387)

1. Make the sherbet according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The formula is in range for sweetening strength because 869.86 g (1 lb 14.68 oz) of the sorbet syrup is sweetening strength, which is 17.39 percent of the total weight of the formula.

If pacotizing the base, the sherbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Popcorn Sherbet

YIELD 5 KG / 11 LB .36 OZ BASE

POPCORN-INFUSED MILK

1 kg / 2 lb 3.27 oz popcorn, freshly popped and hot

4.6 kg / 10 lb 2.26 oz 2% milk, hot

SHERBET BASE

3.6 kg / 7 lb 14.98 oz / 72% Popcorn-Infused Milk

1.4 kg / 3 lb 1.38 oz / 28% Sorbet Syrup (page 387)

1. **FOR THE POPCORN INFUSED MILK:** Steep the just popped popcorn in the hot milk.
2. **FOR THE SHERBET BASE:** Make the sherbet according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
3. Once the base has aged, churn to the desired consistency.
4. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The popcorn used for this formula has no oil or butter added.

If pacotizing the base, the sherbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Lemon-Mascarpone Sherbet

YIELD 5 KG / 11 LB .36 OZ BASE

2 kg / 4 lb 6.55 oz / 39.98% lemon juice

50 g / 1.76 oz lemon zest

2.78 kg / 6 lb 2.06 oz / 55.57% simple syrup (50° Brix)

222 g / 7.83 oz / 4.44% mascarpone

1. Make the sherbet base according to the Modern Sorbet Method #2. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES This recipe uses regular simple syrup and not sorbet syrup because with sorbet syrups the recipe is almost impossible to balance properly.

Add the lemon zest to the lemon juice before making the base.

The formula is in range for sweetening strength because 1109.82 g / 2 lb 7.15 oz of the sorbet syrup is sweetening strength, which is 22.19 percent of the total weight of the formula. This amount is significantly higher than the 16.79 percent of the base recipe, but additional sugar is added because of the acidity of the lemon juice.

If pacotizing the base, the sherbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Rice Milk (Horchata) Sherbet

YIELD 5 KG / 11 LB .36 OZ BASE

3.5 kg / 7 lb 11.46 oz / 70% rice milk

150 g / 5.29 oz / 3% heavy cream

1.35 kg / 2 lb 15.62 oz / 27% Sorbet Syrup (page 387)

1. Make the sherbet according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
2. Once the base has aged, churn to the desired consistency.
3. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES The formula is in range for sweetening strength because 809.87 g / 1 lb 12.57 oz of the sorbet syrup is sweetening strength, which is 16.19 percent of the total weight of the formula.

This recipe was formulated using rice milk. Fresh rice milk can be made by cooking 1 part rice to 5 parts 2-percent milk. In this case, the heavy cream could be eliminated from the recipe.

If pacotizing the base, the sherbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

Roasted McIntosh Apple Sherbet

YIELD 5 KG / 11 LB .36 OZ BASE

5 kg / 11 lb .36 oz McIntosh apples

SHERBET BASE

1.05 kg / 2 lb 5.04 oz / 21% milk

150 g / 5.29 oz / 3% heavy cream

1.4 kg / 3 lb 1.38 oz / 28% Sorbet Syrup (page 387)

2.4 kg / 5 lb 4.66 oz / 48% roasted McIntosh apple purée

1. Preheat a convection oven to 160°C /325°F.
2. Peel, quarter, and roast the apples in a hotel pan until tender, about 20 minutes. Purée.
3. Make the sherbet according to the Method #2 Modern Sorbet Method. Age the base under refrigeration overnight.
4. Once the base has aged, churn to the desired consistency.
5. Harden for at least 2 hours and up to 4 hours. Reserve until needed.

NOTES Roast the apples before combining them with the milk and heavy cream. The apples can be roasted or poached, but always remember to adjust the sugar amount in the sherbet if they are cooked with sugar.

The formula is in range for sweetening strength because 839.86 g / 1 lb 13.62 oz of the sorbet syrup is sweetening strength, which is 16.79 percent of the total weight of the formula.

If pacotizing the base, the sherbet can be scooped and served immediately, but it is easier to work with if it hardens for 1 hour in the freezer.

GRANITÉS (OR GRANITAS)

These recipes were made based on the average amount of sugar (if applicable, as some ingredients contain no sugar) and solids found in the main flavoring. This is important to remember especially for fruit (or vegetable) granités, since their sugar content can vary from fruit to fruit (or vegetable to vegetable). Always check that the Brix degrees in the finished base are within range by using a refractometer, and add or subtract the simple syrup as necessary.

The simple syrup used for these recipes was based on a simple syrup at 50° Brix (equal parts sugar and water by weight).

Review the information on Granités in chapter 5, page 70, before getting started.

Granité Method

1. Place the main ingredient in a stainless steel bowl.
2. Make sure that the temperature of the main ingredient is 20°C / 68°F. If not, temper it.
3. Add some 65° Brix simple syrup that has a temperature of 20°C / 68°F. Speaking in very general terms, a good starting point is 1 part simple syrup to 4 parts of the main ingredient.
4. Whisk the mixture thoroughly. Take a reading on the refractometer. It should read 16° to 19° Brix. The ideal amount is 17° Brix, which is not too sweet but sweet enough. For savory applications, reduce the Brix to 12° to 15° or less, if desired. Always taste to make sure the flavor is to your liking. It is good to trust a refractometer, but trust your taste buds as well.
5. Pour the granité base into a stainless steel hotel pan. The size will depend on the desired amount.
6. Place the pan in a –18°C / 0°F freezer.
7. After 45 minutes to 1 hour, take the pan out of the freezer and scrape the ice crystals that will have formed around the rim of the pan.
8. Repeat this process every 30 minutes, always scraping in a circular motion to ensure even crystal formation.
9. Once all the liquid has frozen, transfer to a frozen 10-cm- / 4-in-deep hotel pan and cover. Return to the freezer and reserve for service.

Almond Milk Granité

YIELD 5 KG / 11 LB .36 OZ BASE

ALMOND PASTE

898 g / 1 lb 15.68 oz / warm water

307 g / 10.83 oz raw slivered almonds

21 g / .74 oz pure almond extract

898 g / 1 lb 15.68 oz sugar

GRANITÉ BASE

328 g / 11.57 oz / 6.55% Almond Paste

1.8 kg / 3 lb 15.49 oz / 35.94% simple syrup (50° brix)

2.88 kg / 6 lb 5.59 oz / 57.51% water

1. **FOR THE ALMOND PASTE:** Heat the water to 85°C / 185°F.
2. Grind the almonds, almond extract, and sugar in a robot coupe. Once it is ground into a fine powder, add the warm water, pouring it in slowly in a steady stream.
3. Once a smooth paste is formed, measure out the required amount of almond paste and transfer to a bowl.
4. **FOR THE GRANITÉ BASE:** Combine with the other measure of water and the simple syrup.
5. Make the granité base according to the Granité Method.

Lime Granité

YIELD 5 KG / 11 LB .36 OZ BASE

3.4 kg / 7 lb 7.93 oz / 68% lime juice

1.6 kg / 3 lb 8.44 oz / 32% simple syrup (50° Brix)

1. Mix the ingredients together until thoroughly combined.
2. Make the granité base according to the Granité Method.

Noilly Prat Granité

YIELD 5 KG / 11 LB .36 OZ BASE

3.4 kg / 7 lb 7.93 oz / 68% Noilly Prat

1.6 kg / 3 lb 8.44 oz / 32% simple syrup (50° Brix)

1. Mix the ingredients together until thoroughly combined.
2. Make the granité base according to the Granité Method.

NOTES Noilly Prat is a French dry vermouth. Vermouth is an aromatized fortified wine that is often flavored with herbs, spices, bark, and flowers.

If desired, substitute Lillet Blanc or Lillet Rouge, other types of fortified and infused wine, for the Noilly Prat.

The alcohol content in these types of fortified wines is still low enough that the base will freeze completely.

Meyer Lemon Granité

YIELD 5 KG / 11 LB .36 OZ BASE

3.9 kg / 8 lb 9.57 oz / 78% Meyer lemon juice

1.1 kg / 2 lb 6.8 oz / 22% simple syrup (50° Brix)

1. Mix the ingredients together until thoroughly combined.
2. Make the granité base according to the Granité Method.

Campari and Orange Granité

YIELD 5 KG / 11 LB .36 OZ BASE

2.5 kg / 5 lb 8.18 oz / 50% Campari

1.3 kg / 2 lb 13.86 oz / 26% simple syrup (50° Brix)

1.2 kg / 2 lb 10.33 oz / 24% orange juice

1. Mix all of the ingredients together until thoroughly combined.
2. Make the granité base according to the Granité Method.

NOTE Campari is an alcoholic apéritif (considered a "bitters") made by infusing bitter herbs, aromatic plants, fruit, and alcohol in water.

Whole Milk Ice

YIELD 5 KG / 11 LB .36 OZ BASE

4.15 kg / 9 lb .38 oz / 83% whole milk reduction

850 g / 1 lb 13.98 oz / 17% brown sugar

1. For the milk reduction: Bring 16 liters (about 4 gallons) of whole milk to a boil and then turn the heat down to medium. Reduce the milk until there is 4.15 kg / 9 lb 2.38 oz.
2. Add the brown sugar while the milk is hot so that it dissolves completely. Mix thoroughly.
3. Make the base according to the Granité Method.

NOTE This recipe contains no simple syrup. The sweetener is brown sugar.

ICE POPS

These recipes were made based on the average amount of sugar (if applicable, as some ingredients contain no sugar) and solids found in the main flavoring. This is important to remember especially for fruit (or vegetable) pops, since their sugar content can vary from fruit to fruit (or vegetable to vegetable). Always check that the Brix degrees in the finished base are within range by using a refractometer, and add or subtract the simple syrup as necessary.

The simple syrup used for these recipes was based on a simple syrup at 50° Brix (equal parts sugar and water by weight).

Review the information on ice pops in chapter 5, page 84, before getting started.

Ice Pops Method

1. Place the juice, purée, infusion, or liqueur in a stainless steel bowl.
2. Make sure that the temperature of the main ingredient is 20°C / 68°F. If not, temper it.
3. Add some 65° Brix simple syrup that has a temperature of 20°C / 68°F. Speaking in very general terms, a good starting point is 1 part simple syrup to 4 parts of the main ingredient.
4. Whisk the mixture thoroughly. Take a reading on the refractometer. It should read 16 to 19° Brix. My personal preference is 17° Brix, which is not too sweet but sweet enough. For savory applications, reduce the Brix to 12 to 15° or less, if desired. Always taste to make sure the flavor is to your liking.
5. Once the ice mix is made, pour into the desired mold.
6. Let the ice freeze at -18°C / 0°F until solid. It will only take a fraction of the time in a blast freezer than it takes in a regular freezer.
7. Once the ice has solidified, it can be taken out of the mold, but it should be done at the very last minute, to prevent freezer burn on your ice. If keeping all of the ices out of the mold, make sure they are properly covered so that they don't take on a "freezer taste." If reserving them for longer periods of time (more than 18 hours), make sure that they are kept in the mold in which they are frozen.
8. TO UNMOLD: place the ice mold into a warm water bath and let it sit in there for a few seconds to ensure that the pop will be released in one piece.

Mimosa Ice Pops

YIELD 5 KG / 11 LB .37 OZ BASE

CHAMPAGNE PORTION

1.73 kg / 3 lb 13.02 oz / 69.1% Champagne

775 g / 1 lb 11.34 oz / 30.9% simple syrup (50° Brix)

ORANGE PORTION

2.18 kg / 4 lb 12.9 oz / 87% orange juice

325 g / 11.46 oz / 13% simple syrup (50° Brix)

1. Put 3.75-cm/1.5-in diameter demi-sphere fleximolds in the freezer. Each mat has between 64 and 72 demi-spheres. This recipe will yield about 200 finished popsicles.
2. Make both bases according to the Ice Pop Method on this page. Pour the liquid into the spheres so that there are the same amount of Champagne demi-spheres and orange demi-spheres.
3. When they have hardened, unmold the demi-spheres and fuse both halves by rubbing the seams where they connect with your fingers (use gloves). Return to the freezer.
4. Once the spheres have hardened, make a small hole in the Champagne portion with a skewer, then put in a lollipop stick as far in as possible without breaking the sphere.
5. Reserve frozen in an airtight container.

Gewürztraminer-Tamarind Ice Pops

YIELD 5 KG / 11 LB .37 OZ BASE

GEWÜRZTRAMINER PORTION

1.73 kg / 3 lb 13.02 oz / 69.1% Gewürztraminer

775 g / 1 lb 11.34 oz / 30.9% simple syrup (50° Brix)

TAMARIND PORTION

500 g / 1 lb 1.64 oz / 20% tamarind purée

250 g / 8.82 oz / 10% simple syrup (50° Brix)

1.75 kg / 3 lb 13.73 oz / 70% water

1. Make both bases according to the Ice Pop Method (page 401). Fill an oval ice tray 12.5 cm / 5 in by .75 cm /.25 in (a total of about 100 ovals will be needed; some trays contain up to 10) halfway full with the tamarind portion. Freeze.
2. Once hardened, fill the ice tray to the top with the gewürztraminer portion. Freeze to harden.
3. Once hardened, pop the frozen tamarind-gewürztraminer ovals out by dipping the tray in cold (not warm or hot) water. Return to the freezer.
4. Fuse half of the frozen ovals with the other half of the frozen ovals by rubbing the seams where they connect with your fingers (use gloves). Freeze.
5. Make a small hole at the bottom end of the pop with a skewer, then insert a lollipop stick as far in as possible without cracking the pop.
6. Reserve frozen in an airtight container.

NOTES Tamarind purée contains close to 58 percent sugar and many solids (69 percent, including sugar); for this reason it was necessary to balance the recipe with water to thin it out so that it could freeze in crystal form. When using purées instead of juices, it is necessary to thin them out this way.

Pinot Grigio Ice Pops

YIELD 5 KG / 11 LB .36 OZ BASE

POPSICLE BASE

3.45 kg / 7 lb 9.69 oz / 69% Pinot Grigio

1.55 kg / 3 lb 6.67 oz / 31% simple syrup (50° Brix)

1. Make the base according to the Ice Pop Method (page 401). Line 50 PVC tubes 10 cm / 4 in by 1.25-cm / .5-in diameter with acetate. Place in the freezer in a standing position on a sheet pan lined with acetate.
2. Fill to the top and freeze to harden.
3. Make a small hole on the exposed surface with a skewer. Insert a lollipop stick halfway in (about 5 cm / 2 in).
4. Reserve frozen in an airtight container.

NOTE If desired, substitute with any other white wine.

Asti Spumanti and Apricot Ice Pops

YIELD 5 KG / 11 LB .27 OZ BASE

ASTI SPUMANTI PORTION

1.73 kg / 3 lb 13.02 oz / 69.1% Asti Spumanti

775 g / 1 lb 11.34 oz / 30.9% simple syrup (50° Brix)

APRICOT PORTION

1.5 kg / 3 lb 4.91 oz / 60% apricot purée

538 g / 1 lb 2.98 oz / 21.5% simple syrup (50° Brix)

463 g / 16.33 oz / 18.5% water

1. Make both bases according to the Ice Pop Method (page 401).
2. Fill an ice pop mold (these molds are typically 10 cm / 4 in long by 3.75 cm / 1.5 in wide at the base and they are about 1.25 cm / 0.5 in narrower at the top) 1 inch full with the Asti Spumanti base and freeze; alternate layers with the apricot base, freezing between each addition, until the mold is filled.
3. Reserve frozen in an airtight container.

NOTE Apricot purée contains 23 percent solids (9 percent sugar); for this reason it was necessary to balance the recipe with water to thin it out so that it could freeze in crystal form. When using purées instead of juices, it is necessary to thin them out this way.

Still-Frozen Desserts

Important reminders:
Review chapter 6 before making any of the following recipes.

The combination of sugar and egg whites will result in a meringue, in which the typical ratio of sugar to egg whites is 2:1. Keep this in mind for these recipes, since the recipe will simply ask for a certain amount of prepared meringue based on this ratio. For example, if it asks for 1 kg / 2 lb 3.27 oz of Italian meringue, it will mean that it was made with 666.66 g / 1 lb 7.52 oz sugar and 333.34 g / 11.76 oz whites.

Some frozen dessert recipes will contain what is known as a *pâte à bombe* in French ("bombe base" in English). It is basically foamed egg yolks with cooked sugar. The procedure is as follows:

Begin whipping egg yolks on high speed; meanwhile, combine sugar with enough water to form a wet-sand texture. Cook the sugar to 115°C / 239° F and pour over the whipping egg yolks once they have tripled in volume; once the hot sugar has been added, the yolk's volume will increase. Whip until the mix has cooled down. The addition of the hot sugar will stabilize the yolk foam because it helps coagulate the proteins that trap the air bubbles. In this case, cooking the egg yolks over a hot water bath is not necessary to obtain more volume from the foam, since the hot sugar that is being added will serve the same purpose. The ratio for pâte à bombe is 40 percent sugar, 60 percent egg yolks. Keep this in mind for the recipes contained in this section, since the recipe will simply ask for a certain amount of pâte à bombe based on this ratio. For example, if it asks for 1000 g of pâte à bombe, it will mean that it was made with 400 g / 14.11 oz sugar and 600 g / 1 lb 5.16 oz yolks.

All still-frozen desserts that contain heavy cream require that it be foamed (whipped). Ideally, for still-frozen desserts that require whipped heavy cream, it won't be too stiff. An adequate consistency would be semifirm (medium-stiff), so that it can be gently folded in to another semiliquid ingredient. When the heavy cream is too stiff, even if it has not been over-whipped, it will crumble and break apart instead of mixing uniformly.

Some recipes contain two or three foams, and many pastry shops are not fortunate enough to own two, let alone three, mixers. Ideally all of the foams would be made at the same time and folded into each other as soon as they have reached full volume (if it is timed correctly). However, if there is only one mixer (or, perish the thought, none), start by foaming the most stable foam, which is the heavy cream foam, and refrigerate it immediately once the desired volume is obtained, to maintain its volume. Next, whip the egg yolks and, finally, the egg whites. Always fold the lightest ingredient into the heaviest (egg whites into egg yolks, then heavy cream into the previous mix or heavy cream into egg yolks).

Finally, portion the finished product into the desired mold(s) and freeze.

PARFAITS

Parfaits are composed of a cooked egg yolk and sugar foam (*pâte à bombe*), cooled to room temperature or chilled, and a heavy cream foam (which will be the dominant foam), sugar, gelatin (as a stabilizer), and a flavor base, usually a fruit purée, juice, or chocolate, melted but cool.

Blood Orange Parfait

YIELD 5 KG / 11 LB .36 OZ BASE

325 g / 11.46 oz / 5.8% blood orange juice

3 blood oranges, zest only

13 g / .46 oz / .23% gelatin sheets, bloomed

2.93 kg / 6 lb 7.35 oz / 52.34% heavy cream

600 g / 1 lb 5.16 oz / 10.72% sugar

1.73 kg / 3 lb 13.02 oz / 30.9% pâte à bombe

1. Combine the blood orange juice and zest. Melt the gelatin with the juice and zest and mix over medium-low heat.
2. Whip the cream and sugar to medium-stiff peaks.
2. Mix the gelatin mixture into pâte à bombe.
3. Fold in the whipped heavy cream in 2 additions.
4. Portion and freeze. Work quickly so that the gelatin does not set before all of the ingredients are combined.

Praline Parfait

YIELD 5 KG / 11 LB .36 OZ BASE

2.85 kg / 6 lb 4.35 oz / 50.86% heavy cream

23 g / .79 oz / .41% gelatin sheets, bloomed

600 g / 1 lb 5.16 oz / 10.71% sugar

1.13 kg / 2 lb 7.95 oz / 20.17% pâte à bombe

1 kg / 2 lb 3.27 oz / 17.85% praline paste (100% nuts, no sugar)

1. Combine 10 percent of the cream (prior to whipping) with the bloomed gelatin and melt together over medium-low heat.
2. Whip the remaining cream and the sugar to medium-stiff peaks.
3. Combine the melted gelatin and cream mixture with the pâte à bombe, and then mix in the praline paste.
4. Fold in the whipped heavy cream in 2 additions.
5. Portion and freeze. Work quickly so that the gelatin does not set before all of the ingredients are combined.

Milk Chocolate Parfait

YIELD 5 KG / 11 LB .36 OZ BASE

2.58 kg / 5 lb 11.01 oz / 46.07% heavy cream

20 g / .71 oz / .36% gelatin sheets, bloomed

600 g / 1 lb 5.16 oz / 10.71% sugar

1.2 kg / 2 lb 10.33 oz / 21.43% pâte à bombe

1.2 kg / 2 lb 10.33 oz / 21.43% milk chocolate (40%), melted but cool

1. Combine 10 percent of the cream (prior to whipping) with the bloomed gelatin and melt together over medium-low heat.
2. Whip the remaining cream and the sugar to medium-stiff peaks.
3. Combine the melted gelatin and cream mixture with the pâte à bombe, and then mix in the milk chocolate.
4. Fold in the whipped heavy cream in 2 additions.
5. Portion and freeze. Work quickly so that the gelatin does not set before all of the ingredients are combined.

NOTE Make sure the chocolate is melted but cool (around 37°C / 99°F). If the chocolate is too hot it will "melt" the heavy cream; if it's too cold it will seize when combined with the cold heavy cream.

SEMIFREDDI (a.k.a. Biscuit Glacée)

A semifreddo is a partially frozen dessert that is made from all three foams (bombe base, Italian meringue, and heavy cream, plus flavor, typically added in a liquid form), which makes it incredibly light. Even though it is frozen, it gives the impression of not being completely frozen when it is eaten, hence the name.

Lemongrass Semifreddo

YIELD 5 KG / 11 LB .36 OZ BASE

SEMIFREDDO BASE

700 g / 1 lb 8.69 oz lemongrass

2.53 kg / 5 lb 9.24 oz / 50.6% heavy cream

1.45 kg / 3 lb 3.15 oz / 29% Italian meringue

1.02 kg / 2 lb 3.98 oz / 20.4% pâte à bombe

1. Crush the lemongrass and combine with 1 kg / 2 lb 3.27 oz of the cream. Bring to a boil, cover, and steep for 2 hours, stirring occasionally.
2. Strain out the lemongrass through a fine-mesh strainer and chill. Once cold, combine with the remaining cream.
3. Whip the cream to medium-stiff peaks.
4. Fold the Italian meringue into the pâte à bombe, and then fold the whipped cream into the mixture.
5. Portion and freeze.

NOTE The lemongrass amount is only to infuse the heavy cream; it will not be an actual solid ingredient in the finished recipe.

Vanilla Semifreddo

YIELD 5 KG / 11 LB .36 OZ BASE

200 g / 7.05 oz Tahitian vanilla pods

2.54 kg / 5 lb 9.59 oz / 50.8% heavy cream

1.01 kg / 2 lb 3.63 oz / 20.2% pâte à bombe

1.45 kg / 3 lb 3.15 oz / 29% Italian meringue

1. Split and scrape the vanilla pods and combine them with 1 kg / 2 lb 3.27 oz of the cream. Bring to a boil, cover, and steep for 2 hours, stirring occasionally.
2. Strain out the vanilla pods through a fine-mesh strainer and chill. Once cold, combine with the remaining cream.
3. Whip the cream to medium-stiff peaks.
4. Fold the Italian meringue into the pâte à bombe, and then fold the whipped cream into the mixture.
5. Portion and freeze.

NOTE The vanilla pod amount is only to infuse the heavy cream; it will not be an actual solid ingredient in the finished recipe.

Espresso Semifreddo

YIELD 5 KG / 11 LB .36 OZ BASE

130 g / 1 lb 12.22 oz espresso beans, finely ground

2.54 kg / 5 lb 9.59 oz / 50.8% heavy cream

1.01 kg / 2 lb 3.62 oz / 20.2% pâte à bombe

1.45 kg / 3 lb 3.15 oz / 29% Italian meringue

1. Combine the espresso beans with 1 kg / 2 lb 3.27 oz of the cream. Bring to a boil, cover, and steep for 2 hours, stirring occasionally.
2. Strain out the espresso grounds through a fine-mesh strainer and chill. Once cold, combine with the remaining cream.
3. Whip the cream to medium-stiff peaks.
4. Fold the Italian meringue into the pâte à bombe, and then fold the whipped cream into the mixture.
5. Portion and freeze.

NOTE The espresso beans amount is only to infuse the heavy cream; it will not be an actual solid ingredient in the finished recipe.

BOMBES

Bombes have the same components as a frozen parfait, but with more heavy cream (parfait: 1; bombe: 1.5) and a flavor. The finished base is traditionally poured into a dome-shaped mold, which is how it got its name. Thanks to this term, many desserts that have a dome shape are called bombes.

Peanut Butter Bombe

YIELD 5 KG / 11 LB .36 OZ BASE

50 g / 1.76 oz / .89% gelatin sheets, bloomed

2.03 kg / 4 lb 7.61 oz / 36.25% heavy cream

600 g / 1 lb 5.16 oz / 10.71% sugar

1 kg / 2 lb 3.27 oz / 17.85% peanut butter (natural, not hydrogenated)

1.92 kg / 4 lb 3.72 oz / 34.29% pâte à bombe (see Notes)

1. Bloom the gelatin in cold water.
2. Whip 1 kg / 2 lb 3.27 oz of the cream and the sugar to medium-stiff peaks. Refrigerate.
3. Meanwhile, combine 500 g / 1 lb 1.64 oz of the peanut butter with the remaining cream and the bloomed gelatin in a small saucepan. Place the pot over medium heat and whisk until the mixture is evenly mixed and the gelatin has dissolved. Do not get it too hot, otherwise the fat will separate from the peanut butter.
4. Add this mix to the pâte à bombe while it is mixing; immediately afterward, add the remaining peanut butter.
5. Fold in the whipped heavy cream in 2 additions. Work quickly so that the gelatin doesn't set until the product is finished, otherwise there will be small chunks throughout the bombe.

NOTES Due to the high fat content in the peanut butter, this recipe needs to be made very carefully (follow the instructions accurately). It is also why it has less heavy cream than a bombe requires (the peanut butter is more responsible for the smoothness of this recipe than the whipped cream).

This bombe is made with confectioners' sugar (do not cook!) and pasteurized egg yolks, whipped in the mixer until they have quadrupled in volume.

Asian Spice Bombe

YIELD 5 KG / 11 LB .36 OZ BASE

ASIAN SPICE MIX

160 g / 5.64 oz Vietnamese cinnamon

100 g / 3.53 oz star anise

10 cloves

100 g / 3.53 oz ginger

70 g / 2.47 oz mandarin orange zest

BOMBE BASE

450 g / 15.87 oz Asian Spice Mix

3.4 kg / 7 lb 7.93 oz / 68% heavy cream

15 g / .53 oz / .3% gelatin sheets, bloomed

600 g / 1 lb 5.16 oz / 12% sugar

985 g / 2 lb 2.73 oz / 19.7% pâte à bombe

1. Crush and toast the cinnamon, star anise, and cloves. Meanwhile, scald 1 kg / 2 lb 3.27 oz of the cream from the base recipe. Once the dry spices are toasted and while they are hot, add them to the hot cream.
2. Peel the skin off the ginger and crush it. Add to the hot cream along with the zest. Cover and let steep for 30 minutes.
3. Strain the cream through a fine-mesh strainer and cool. Once the cream is cold, combine it with the remaining heavy cream.
4. Reserve 200 g / 7.05 oz of the infused heavy cream. In a saucepan, combine the heavy cream and the gelatin. Melt the gelatin over low heat, stirring constantly. Reserve warm over low heat.
5. Whip the heavy cream and sugar to medium stiff. Reserve under refrigeration.
6. Make the pâte à bombe. Once the pâte à bombe has quadrupled in volume, pour in the melted gelatin–heavy cream mixture.
7. Fold in the whipped heavy cream into the pâte à bombe in 2 additions. Work quickly so that the gelatin doesn't set until the product is finished, otherwise there will be small chunks throughout the bombe.

NOTES The spice mix is only for steeping and is not a solid component of the recipe.

Kaffir Lime Leaf Bombe

YIELD 5 KG / 11 LB .36 OZ BASE

3.4 kg / 7 lb 7.93 oz / 60.66% heavy cream

450 g / 15.87 oz / 0% kaffir lime leaves, coarsely chopped

15 g / .53 oz / .27% gelatin sheets, bloomed

1.59 kg / 3 lb 8.08 oz / 28.37% pâte à bombe

600 g / 1 lb 5.16 oz / 10.7% sugar

1. Scald 1 kg / 2 lb 3.27 oz of the cream and add the lime leaves to it. Cover and let steep for 20 minutes (any more and its flavor will turn bitter).
2. Once steeped, strain the leaves out through a fine-mesh strainer and cool the cream over an ice bath.
3. Reserve 200 g / 7.05 oz of the infused heavy cream. In a saucepan, combine the heavy cream and the gelatin. Melt the gelatin over low heat, stirring constantly. Reserve warm over low heat.
4. Make the pâte à bombe. Once the pâte à bombe has quadrupled in volume, pour in the melted gelatin–heavy cream mixture.
5. Whip the heavy cream and sugar to medium stiff.
6. Fold in the whipped heavy cream into the pâte à bombe in 2 additions. Work quickly so that the gelatin doesn't set until the product is finished, otherwise there will be small chunks throughout the bombe.
7. Portion and freeze.

NOTE The lime leaves are for steeping only and are not a solids component of the recipe.

FROZEN SOUFFLÉS

A frozen soufflé can be made with a combination of foams, such as heavy cream and egg whites, or egg yolks and egg whites (but never the three together), and a flavor base, usually a fruit purée or chocolate. A soufflé is distinguished by containing a large proportion of foamed egg whites (French, Swiss, or Italian meringue) in relation to its other components, which will give it a very light texture, even when frozen.

Frozen Tangerine Soufflé

YIELD 5 KG / 11 LB .36 OZ BASE

TANGERINE JUICE REDUCTION

4 kg / 8 lb 13.09 oz tangerine juice

SOUFFLÉ BASE

1 kg / 2 lb 3.27 oz / 20% Tangerine Juice Reduction

1 kg / 2 lb 3.27 oz / 20% heavy cream, whipped to medium-stiff peak

3 kg / 6 lb 9.82 oz / 60% Swiss meringue

1. **FOR THE TANGERINE JUICE REDUCTION:** Reduce the tangerine juice to 1 kg / 2 lb 3.27 oz tangerine juice to concentrate the flavor.
2. **FOR THE SOUFFLÉ:** Combine the whipped heavy cream with the juice reduction.
3. Fold in the Swiss meringue in 2 additions.
4. Portion and freeze.

NOTE There is no gelatin in this recipe and it has a large amount of egg whites, therefore it is crucial to work quickly in order to avoid foam deflation.

Frozen Basil Soufflé

YIELD 5 KG / 11 LB .36 OZ BASE

1 kg / 2 lb 3.27 oz basil leaves

1.5 kg / 3 lb 4.91 oz / 30% heavy cream

3.5 kg / 7 lb 11.46 oz / 70% Swiss meringue (page xxx)

1. Combine the basil leaves with the cream and let steep under refrigeration for 24 hours. Strain the leaves out with a fine-mesh strainer.
2. Whip the cream to medium-stiff peaks.
3. Fold in the Swiss meringue in 2 additions. If folding in the basil leaf chiffonade (see Note), do so at the end of the process.
4. Portion and freeze.

NOTE The basil leaves are only for infusing into the heavy cream; they are not part of the solids content, although it is possible to cut a few leaves in chiffonade to fold into the soufflé base for added flavor and color. If doing so, do not exceed 50 g / 1.76 oz of basil leaves, and make sure the chiffonade is very fine (hair thin).

Frozen Mexican Chocolate Soufflé

YIELD 5 KG / 11 LB .36 OZ BASE

1 kg / 2 lb 3.27 oz / 20% heavy cream

1 kg / 2 lb 3.27 oz / 20% Mexican chocolate, coarsely chopped

3 kg / 6 lb 9.82 oz / 60% Swiss meringue

1. Bring the heavy cream to a boil and mix in the chocolate. Use a beurre mixer to thoroughly combine both ingredients. Cool the mixture.
2. Once it is cool enough, it can be whipped as though it were heavy cream, but it will be much denser.
3. Once the previous mix is whipped, fold in the Swiss meringue in 2 additions.
4. Portion and freeze.

FROZEN MOUSSES

A frozen mousse is composed of two foams: either an egg yolk foam and heavy cream, or an egg yolk foam and an egg white foam, plus a flavor base (fruit purée, chocolate, or infused heavy cream). Typically a frozen mousse will contain equal parts of the combined foams and the flavor base (1:1 ratio), which makes it the densest aerated frozen dessert.

Frozen Apricot Mousse

YIELD 5 KG / 11 LB .36 OZ BASE

APRICOT PURÉE

2 kg / 4 lb 6.55 oz apricots

15 g / .53 oz lime juice

MOUSSE BASE

1.41 kg / 3 lb 1.73 oz / 28.2% Apricot Purée

1.6 kg / 3 lb 8.43 oz / 32% heavy cream

450 g / 15.87 oz / 9% sugar

40 g / 1.41 oz / .8% gelatin sheets, bloomed in ice-cold water

1.5 kg / 3 lb 4.9 oz / 30% pâte à bombe

1. **FOR THE APRICOT PURÉE:** Score the apricots with an X on their top part, then blanch them in boiling water until the skins can be easily removed. Shock the blanched apricots in ice water. Remove their skin and the pits. Purée the flesh with a small amount of lime juice to prevent oxidation. Once puréed, pass through a fine-mesh strainer.
2. Bring the apricot purée to room temperature.
3. Whip the cream to medium-stiff peaks with the sugar, and then refrigerate.
4. Melt the gelatin sheets with a small amount of apricot purée in a saucepan over low heat, then combine with the remaining room-temperature purée (if the purée is cold, the gelatin will set very quickly).
5. Mix the pâte à bombe with the purée-gelatin mix; then fold in the whipped heavy cream in 2 additions.
6. Portion and freeze.

Frozen Gingerbread-Spice Mousse

YIELD 5 KG / 11 LB .36 OZ BASE

GINGERBREAD-SPICE MIX

⅓ nutmeg

13 g / .46 oz cinnamon sticks

4 g / .14 oz cloves

23 g / .81 oz ginger root

MOUSSE BASE

2.18 kg / 4 lb 12.9 oz / 43.6% heavy cream

40 g / 1.41 oz / .8% Gingerbread-Spice Mix

40 g / 1.41 oz / .8% gelatin sheets, bloomed

2.18 kg / 4 lb 12.9 oz / 43.6% pâte à bombe (see Notes)

560 g / 1 lb 3.74 oz / 11.2% sugar

1. **FOR THE SPICE MIX:** Crush and toast the nutmeg, cinnamon, and cloves. Meanwhile, scald 1 kg / 2 lb 3.27 oz of the cream. Once the dry spices are toasted and while they are hot, add them to the hot cream.
2. Peel the ginger and crush it. Add to the hot cream. Cover and let steep for 30 minutes.
3. Strain the cream through a fine-mesh strainer and cool. Once the cream is cold, combine it with the remaining cream.
4. **FOR THE MOUSSE BASE:** Reserve 200 g / 7.05 oz of the infused heavy cream. In a saucepan, combine the heavy cream and the gelatin. Melt the gelatin over low heat, stirring constantly. Reserve warm (over low heat).
5. Once the pâte à bombe has quadrupled in volume, pour in the melted gelatin–heavy cream mixture.
6. Whip the heavy cream and sugar to medium-stiff.
7. Fold in the whipped heavy cream into the pâte à bombe in 2 additions.
8. Portion and freeze.

NOTE The spice mix is only for steeping and is not a solids component of the recipe.

Instead of using sugar in the pâte à bombe, use molasses. Bring the molasses up to 115° C / 239° F, then pour into the whipping egg yolks.

Frozen Lemon Verbena Mousse

YIELD 5 KG / 11 LB .36 OZ BASE

500 g / 1 lb 1.64 oz lemon verbena leaves

1.9 kg / 4 lb 3 oz / 38% heavy cream

530 g / 1 lb 2.7 oz / 10.6% sugar

226 g / 7.97 oz / 4.52% lemon juice

13 g / .46 oz / .26% gelatin sheets, bloomed

2.33 kg / 5 lb 2.19 oz / 46.6% pâte à bombe

1. To infuse the lemon verbena, combine the leaves with the cream and let steep in refrigeration for 24 hours. Strain the leaves out with a fine-mesh strainer.
2. Whip the cream and sugar to medium-stiff peaks.
3. Melt the gelatin with the lemon juice and stir into the pâte à bombe.
4. Fold in the whipped heavy cream in 2 additions.
5. Portion and freeze. Work quickly so that the gelatin does not set before all of the ingredients are combined.

NOTE The lemon verbena leaves are only for infusing into the heavy cream; they are not part of the solids content of the recipe.

Appendices

Average Sugar, Solids, and Acid Content of Fruit

The following table identifies the most commonly used fruits' sugar content, solids, and acid content percentage by weight. This table will be used when determining the formulas for developing sorbet recipes (see page 377). If there is a fruit that does not appear on this table, use its closest equivalent; for example, Asian pears and apples.

FRUIT	*AVERAGE SUGAR CONTENT (%)	*SOLIDS (%)	*ACID CONTENT (%)
Apple	13	14	.8
Apricot	9	14	1.7
Avocado	1	27	.2
Banana	17	25	3
Blackberry	8	16	1.5
Black currant	10	15	3.2
Blueberry	11	15	.3
Cactus pear (or prickly pear)	11	19 (without seeds)	.1
Cherry	14	19	.5
Coconut	-	56.2	-
Cranberry	4	16	3
Fig	15	23	.4
Gooseberry	11	15	1.8
Grape	16	21	.3
Grapefruit	6	10	2
Guava	7	15	.4
Honeydew	10	8	.2
Kiwi	14	16	3
Lemon	2	9	5
Lime	1	9	5
Litchi	17	15	.3
Mandarin	13	12	1
Mango	11	15	.5

FRUIT	*AVERAGE SUGAR CONTENT (%)	*SOLIDS (%)	*ACID CONTENT (%)
Melon (cantaloupe)	7	8	.2
Orange	11	10	1.2
Papaya	8	15	.1
Passion fruit	11	15	3
Peach	9	14	.4
Pear	10	17	.1
Persimmon	14	14	.2
Pineapple	13	14	1.1
Plum	11	19	.6
Pomegranate	13	20	1.2
Raspberry	7	14	1.6
Red currant	6	16	1.8
Strawberry	7	11	1.6
Tomato	3	16	.5
Watermelon	9	7	.2

Source: Harold McGee, *On Food and Cooking, 2nd ed.,* New York: Scribner, 2004; and the USDA.

Seasonal Availability of Fruit

The following seasonal availability chart is for the most commonly used fruits in the United States. It provides general information on their seasonal availability and storage.

FRUIT	PEAK MONTH(S)	SPECIAL NOTES
APPLES: Some of the most common varieties: Braeburn, Cameo, Cortland, Empire, Fuji, Gala, Ginger Gold, Golden Delicious, Granny Smith, Gravenstein, Honeycrisp, Idared, Jonagold, Jonathan, McIntosh, Newton Pippin, Northern Spy, Pink Lady, Pink Pearl, Red Delicious, Rome Beauty	August–December; ideal quality is in the fall (September to the end of November)	Some varieties such as Granny Smiths are available year-round. Many varieties only thrive during the fall. Have a 90- to 240-day shelf life under refrigeration. It is not recommended to store with ethylene-sensitive items (such as bananas). Peeled and cored, apples freeze well, but might become bloated and mealy and are more suitable for cooking and baking. Purée freezes very well.
APRICOTS	May–August	Apricots are the first of the stone fruits to appear in early summer. Apricots are best ripened at room temperature in a single layer rather than piled up. Ripen well in paper bags. Ethylene producer. Apricots become mealy if exposed to high temperatures. Only wash just before using them, otherwise they will get damaged. Shelf life: 7–14 days in refrigeration, 1–2 days once ripe. Freeze well if they are to be puréed, cooked, or baked. Purée freezes well, whole fruit does not.
ASIAN PEARS	July–October	Odor sensitive (will absorb strong odors). Shelf life: 10–15 days in refrigeration. Ethylene sensitive (do not store with ethylene-producing items). Purée freezes well, whole fruit does not.
AVOCADOS (Hass) Other varieties: Fuerte, MacArthur, Bacon, Zutano, Pinkerton, Gwen, and Reed	Hass: In California, April–November (ideal in warmer months: May–September). Other varieties' seasons will vary.	Grown in warm climates, such as California, Florida, and Mexico. Fruit only ripens once it is picked. Hass avocado skin will turn black once it ripens. Other varieties' skin will remain green. The fruit produces ethylene gas, but is often treated with additional ethylene gas to speed up the ripening process. Shelf life: 14–28 days, stored between 4°C / 40°F and 13°C / 55°F, 85% humidity. Does not freeze well.
BANANAS (yellow) Other varieties: Hawaiian plantain, Burrow, Dominique, Manzano/apple, Nino, plantain/Macho, red, yellow small	Year-round	Grown in warm climates, mostly in other countries, such as Ecuador, Costa Rica, Mexico, Colombia, Guatemala, and Honduras. Gray-yellow or dull bananas have been improperly handled and must be rejected or disposed of. Produces large amounts of ethylene gas, therefore the best method for ripening is to leave them in a paper bag or a cardboard box. Bananas are often used to ripen other fruits by placing them together in a semi-ventilated container. Shelf life once ripened: 3–7 days, depending on environmental conditions. Storing temperature: 13°C / 56°F to 14°C / 58°F. Ripening temperature: 15°C / 60°F to 18°C / 65°F, 90 to 95% relative humidity. Purée freezes well, whole fruit does not.
BLACK CURRANTS, PINK CURRANTS, RED CURRANTS, AND WHITE CURRANTS	Single growth in the spring	Grow in warm climates that do not exceed 30°C / 85°F. Not recommended to eat raw (highly acidic) and without the addition of sugar. Shelf life: 7–10 days in refrigeration. All currants, whole or puréed, freeze very well.
BLACKBERRIES	June–September	Good-quality blackberries will be bright, clean, and fresh, with good color and plumpness. Berries with caps attached may be immature. Overripe berries are dull, soft, and may leak moisture. Shelf life: 2–3 days in refrigeration. Whole fruit and purée freeze very well.

BLUEBERRIES	Mid July–early September (Northeast and Northwest U.S. coast mostly)	There are many varieties of blueberries, but the most common is the Bluecrop variety. Other popular varieties are Berkeley, Elliot, and Jersey. This fruit is ideally ripened on the plant. Off-season they are imported from South America, but they are inferior in quality. Size does not denote quality of ripeness. Shelf life: 10–18 days in refrigeration. Whole fruit and purée freeze very well.
CACTUS PEAR (a.k.a. prickly pear)	Late June–September	Mostly imported from Mexico. It is the fruit of the nopal cactus. It is covered in a prickly skin. The flesh is very moist and contains many seeds. It is available in a deep red and a bright green, with no significant variations in flavor. It ripens best on the plant. Shelf life: 10–12 days in refrigeration. Flesh freezes well, but it is recommended to crush the fruit and strain out the seeds before doing so. Not recommended for cooking or baking.
CHERRIES (Bing, Rainier, Lambert, and Van, among others)	Mid May to late August	Cherries with stems have a longer shelf life than those that don't. They are also odor sensitive and will absorb strong off-flavors. Slight brown spotting indicates high sugar content, not spoilage. Cherries that are mahogany or reddish-brown are considered the best tasting. Shelf life: 10–21 days in refrigeration. Whole fruit, purée, and juice freeze very well.
CITRUS FRUIT		Citrus can last for a week at room temperature, and 14–28 days refrigerated. For ideal flavor extraction, it is recommended to not only use the juice of the fruit, but the zest as well. A good idea is to scrape the skin of the citrus with a sugar cube to absorb the oils, then make a simple syrup with this sugar, and finally add this syrup to the fruit juice to make the sorbet base. Candied citrus zest also provides another flavor and textural dimension to a frozen dessert. Juice and fruit supremes freeze very well.
BLOOD ORANGES	Mid December–March	
CLEMENTINES	November–January	
GRAPEFRUITS (pink and white)	Available year-round with the peak from January through April. Florida and Texas provide the bulk of the winter crop, while Arizona and California produce the bulk of the spring and summer supply.	
KEY LIMES	Year-round	
KUMQUATS	Winter	
LEMONS	Year-round; peak is April–July	
LIMES	Year-round	
MANDARINS (Kinnow, Royal)	January–April	
MEYER LEMONS	November–March (varies, depending on what coast they grown on)	
NAVEL ORANGES	November–May; peak is January, February, and March	
POMELOS	January–February	
SATSUMAS	Winter–spring	
TANGELOS (a.k.a. Minneola)	December–February	

TANGERINES (Fairchild, Algerian, and Dancy)	November–January	
VALENCIA ORANGES	Year-round; peak is May, June, and July	
COCONUTS	Year-round, since they are grown around the world	Available from tropical areas around the world. Many pastry chefs opt for factory-made purées because of the time-consuming task of extracting the flesh from the coconut, puréeing, and straining. Coconuts ripen best on the tree, and can take anywhere from 2 months for small varieties to up to a year for larger varieties. They are one of the few fruits that travel well (because of their hard shell). Shelf life: 7–14 days after peak ripening in refrigeration. Purée and flesh (no skin) freeze very well.
CRANBERRIES	October–December	The majority of cranberries are grown in Massachusetts and Oregon. Shelf life: 3–4 months in refrigeration. Poorly colored fruit can pick up better coloring if held for a few weeks at 7°C / 45°F to 10°C / 50°F. They contain a high amount of pectin, a natural stabilizer, and therefore make for very smooth sorbets without the addition of any other stabilizers. Freeze very well, whole or puréed.
FIGS (Black Mission, Calimyrna, and Kadota, among others)	June–October	Very susceptible to odor absorption. Recommended to store in a single layer on paper towel–lined sheet pans. Ripen well at room temperature. Shelf life: 10–12 days. Puréed and whole fruit freeze well.
GOOSEBERRIES (American: Pixwell, Downing, and Poorman; European: Fredonia)	June–August; peak is in July	Related to currants. The Poorman variety (green in color) is the most recommended for dessert. Not cultivated commercially on a large scale. Fruit is very delicate, and some say it is an acquired taste because of its predominant tart taste. Shelf life: 7–10 days refrigerated. Whole fruit and purée freeze well.
GRAPES Common domestic varieties: Ribier, Exotic, Niabell, Fantasy, Maroo, Flame, Ruby, Emperatriz, Crimson, Majestic, Cardinal, Emperor, Queen, Christmas Rose, Red Globe, Perlette, Red Flame, Thompson, Sugarone, Autumn, and Concord	Most domestic varieties are available from May to January. Concord grapes, though, are available from the end of August to the beginning of October. Wine-producing grapes (Muscat, Shiraz, pinot noir, etc.) are harvested in the fall.	Ripening ends after harvest. A chalky bloom look is a sign of freshness. It is not recommended to purée grapes in a blender because of their seeds and acidic skin, but to crush them and then strain them through a fine-mesh strainer. For grapes with intense flavor, it is a good idea to place them in a pot with water (enough to fill the pot one-quarter full), bring them to a boil, turn the heat down, and simmer for 20 minutes, then turn the heat off and let them sit for 30 minutes, then pass through a fine-mesh strainer. Shelf life: 56–180 days in refrigeration. They will absorb strong odors produced by leeks and onions. Whole fruit and fruit juice freeze well.
GUAVAS	In warmer regions guavas will ripen all year. Mostly available in California.	Varieties differ widely in flavor and seediness. The better varieties are soft when ripe, and creamy in texture with a rind that softens to be fully edible. The flesh may be white, pink, yellow, or red. The sweet, musky odor is pungent and penetrating. The seeds are numerous but small and, in good varieties, fully edible. There is a distinctive change in the color and aroma of the guava that has ripened. For the best flavor, allow fruit to ripen on the tree. They can also be picked green-mature and allowed to ripen off the tree at room temperature. Placing the fruit in a brown paper bag with a banana or apple will hasten ripening. Mature green fruit can be stored for 2–5 weeks in refrigeration. Fruit that has changed color cannot be stored for any extended periods. It bruises easily and will quickly deteriorate or rot. Whole fruit and fruit purée freeze well.

KIWIS (green and golden varieties)	California kiwis are available from November to the end of May.	Ethylene sensitive when underripe, ethylene producer once ripe. Green kiwis have a shelf life of 28 days refrigerated and 3–7 days at room temperature. Gold kiwis last up to 14 days refrigerated and 3–4 days at room temperature. Fruit ripens very well once picked from the plant. It is recommended to ripen at room temperature and not in refrigeration. Fruit with wet spots must be discarded. Purée freezes well, whole fruit does not.
LITCHIS	From Asia: May–July From Mexico: July–August From Florida: late May–early August	The best-quality litchi is from southern China, where it originated. Ideally, litchis are sold in bundles, but loose ones are more economical. The skin should be bright red, and the inside should yield to the touch. A telltale sign of a ripe litchi is when the spiny skin “flattens” and becomes smooth. Avoid litchis that leak. Shelf life: 5–7 days refrigerated. Close relatives to the litchi include rambutans and loganberries, similar in look and composition, but distinct in flavor. Fruit flesh (no seeds or skin) and puréed flesh will freeze well.
MANGOES (Varieties: Kent, Tommy Atkins, Haden, Manila, Ataulfo, and Keitt)	Tommy Atkins: Mid May–early July Keitt: July–September Kent: July–August Manila: June–August Haden: July–September Ataulfo: June–August	Close to 500 varieties exist worldwide. Most of the mangoes sold in the U.S. are imported from Mexico. Florida is the largest producer in the country. Ripeness of mangoes can be determined by either smelling or squeezing. A ripe mango will have a full, fruity aroma emanating from the stem end. Mangoes can be considered ready to eat when slightly soft to the touch and yielding to gentle pressure. Shelf life: 1–2 weeks. Ideally stored at 12°C / 55°F. The best way to ripen a mango is at room temperature. Purée freezes well; whole fruit does not.
MELONS: Ambrosia, Canary, cantaloupe, Casaba, Charentais, Crane, Crenshaw, Galia, Honeydew, Juan Canary, Persian, and Santa Claus	Summer	Ethylene producers. It is recommended to ripen at room temperature and process immediately once the melon has reached its peak. It is possible to refrigerate melons, but if exposed to low temperatures for long periods of time, they will suffer chilling injury. Ripeness is hard to determine without looking inside the fruit, but there is a characteristic floral aroma and the blossom end yields slightly to the touch. If stem end is rough with portions of the stem remaining, the melon was harvested prematurely. Cut fruit absorbs odor and flavors quickly. It must be refrigerated at this point, because bacteria thrive in melon flesh netting. Purée freezes well; whole fruit does not.
PAPAYAS	Available year-round	Not a significant crop grown in the continental United States. The majority are grown in Hawaii and imported from Mexico and Brazil. Ethylene producer. They ripen in 2–3 days when held at temperatures between 13°C / 55°F and 18°C / 65°F. Never store an under-ripe papaya below 7°C / 45°F/ because the ripening process will stop. Once ripened, the fruit can be refrigerated. A papaya is ripe when the skin is soft and the flesh yields slightly to the touch. Purée freezes well; whole fruit does not.
PASSION FRUITS	Available year-round	Grown in subtropical climates in the Caribbean and Mexico. Some growers in California have been successful with this crop. The fruit ripens best off the plant. A passion fruit is ripe when the skin is deeply wrinkled. Smooth-skinned fruits should be left to ripen at room temperature. The taste is typically abrasively tart and is combined with sugar or sweeter fruit juices, such as orange juice. The seeds are edible and provide a pleasant texture. Juice freezes well; whole fruit does not.

PEACHES (There are close to 150 varieties.) Subcategory: nectarines. Similar yet smaller and sweeter. Lack "fuzz" on the skin.	May–August; peak is June–July	From the stone fruit family. Best when ripened on the tree. Once picked, they will soften as they mature, making them ideal at this point. They will be soft, plump, and mildly fragrant at the stem end. This condition is not only ideal for eating, but for blanching as well to remove the skin. When under-ripe, the skin will only come off if peeled. Stone fruit, except cherries, should always be skinned to be puréed and used in a frozen dessert. Any tone of green coloring on the skin is a sign of under-ripeness, and the fruit will never ripen at this point if it has been picked from the tree. To store, as with any stone fruit, lay on a sheet pan lined with paper towels in a single layer. Shelf life: 3–4 days if ripe. Store between 10°C / 51°F and 25°C / 77°F. Ethylene producer. Purée freezes well, whole fruit does not.
PEARS (More than 250 varieties available.) Most common: Anjou, Bartlett, Bosc, Comice, Forelle, Packham, Seckel and Williams	Late summer to mid–fall	Ripen well off the tree. Ideal ripening temperature is 15°C / 60°F to 21°C / 70°F. Shelf life once ripened: 3–4 days. Once ripened can be refrigerated, but it is recommended to either consume or process (purée, cook, or bake) when peak ripeness occurs. Ethylene and odor producer. Ethylene and odor sensitive. When ripe, skin will be soft and flesh will yield to the touch. It will have a floral aroma. Avoid pears with severe browning in the skin and flesh. They will have a fermented flavor. Purée freezes well, but whole fruit will suffer freezer damage.
PERSIMMON VARIETIES: **ASTRINGENT:** Eureka, Hachiya, Honan Red, Saijo, Tamopan, Tanenashi, and Truimph **NON-ASTRINGENT:** Fuyu, Gosho, Imoto, Izu, Jiro, Maekawajiro, Okugosho, and Suruga	Late fall–early winter	Persimmons can be classified into two general categories: those that bear astringent fruit until they are soft-ripe and those that bear non-astringent fruits. Astringent varieties are harvested when they are hard but fully colored. They will soften on the tree and improve in quality, but much will be lost to birds. Astringent persimmons will ripen off the tree if stored at room temperature. Non-astringent persimmons are ready to harvest when they are fully colored, but for best flavor, they should be allowed to soften slightly after harvest. Mature, hard astringent persimmons can be stored in the refrigerator for at least 1 month. They can also be frozen for 6–8 months. Non-astringent persimmons can be stored for a short period of time at room temperature. Whole fruit does not freeze well, purée does.
PINEAPPLES	Year-round	Pineapples available in the U.S. are grown in Hawaii, Costa Rica, Honduras, and Mexico. Fruit with deep yellow shell color has a higher sugar content because it is picked when the fruit has almost completely grown. Can be ripened at 10°C / 50°F to 13°C / 56°F. Once ripe it is recommended to refrigerate or process. Shelf life is 14–36 days refrigerated if under-ripe. Odor sensitive. Juice freezes well.
PLUMS (There are close to 50 cataloged varieties.) Subcategory: Pluots. A hybrid of plums and apricots.	Summer–early fall	Part of the stone fruit family. Ripen well off the tree between 10°C / 51°F and 25°C / 77°F, but will not increase in sweetness, therefore it is best to let the fruit ripen on the tree. Once ripened they should be consumed, processed, or refrigerated. Shelf life: 10–14 days when under-ripe, 2–3 days once ripe. If the fruit yields to gentle pressure, it is ripe. Purée freezes well, whole fruit does not.
POMEGRANATES Wonderful is by far the most commercially available variety. Other varieties include: Granada, Ruby Red, Foothill Early, and Spanish Sweet.	Late summer (August)–early fall	The best-quality fruit can be found in California, Arizona, and Northern Mexico. Fruit should be harvested as it reaches full maturity. It will hold for 2–3 weeks in refrigeration. To juice pomegranates, it is not recommended to use a blender, but to crush them through a fine-mesh strainer. As labor intensive as it is, the result is an extraordinary bright red juice. Juice and seeds freeze well.

PUMPKINS (There are close to 50 commercially available varieties.)	Harvested from late August–late October. Available until December.	Although classified as gourds, they are technically fruit, and are closely related to cucumbers, squash, and watermelon. They are best harvested when the fruit is fully colored. Smaller varieties have much more and better flavor than larger varieties, which are more suitable for jack-o-lanterns than for eating. Pumpkins need to be cooked to be edible. The seeds are a valued by-product that can be dried, salted, toasted, or candied. Whole pumpkins can be stored in a cool, dry place for up to 1 month. Temperatures above 15°C / 60°F will make the flesh stringy. If space allows, pumpkins can be refrigerated for up to 2 months, but relative moisture should be below 70%. Canned pumpkin is convenient but not necessarily better than fresh. Whole fruit does not freeze well, but purée does.
RASPBERRIES (There are more than 24 commercially available varieties of raspberries.) Reveille is one of the most popular varieties. Black and yellow raspberries are considered a subcategory, and each one has its own number of varieties, but most of them are the result of botanical engineering.	Late spring–summer	Avoid unusually large raspberries. This is a telltale sign of growth hormones and botanical engineering; while the fruit may look appealing, the taste is exceedingly tart, with little to no raspberry flavor. Smaller fruit will have a more pronounced flavor. Use raspberries that have been grown locally, because once they are picked they start losing flavor and have a very short shelf life (2–3 days), even in refrigeration. Ripe berries are plump, firm, dry, and deeply colored. As with any other berry, it is recommended to store raspberries on a paper towel–lined sheet pan in a single layer in refrigeration. It is not recommended to wash raspberries because they will get severely damaged. Purée and whole fruit freeze well.
STRAWBERRIES (There are more than 30 commercially available varieties.)	Late April–July	As with raspberries, smaller fruit will have a better and more pronounced flavor than unnaturally large ones. They are available year-round, but this is not a good thing. Since they have a short shelf life (5–7 days), they are often picked under-ripe so they can travel for long periods of time with little to no damage. Berries do not improve off the plant. Ripe berries are firm, well shaped, dry, have a uniform deep red skin (no green), and should still have the green cap attached. They are best left to ripen on the plant, then picked and processed as soon as possible. Strawberries should be washed before using, preferably with the caps still on. Once washed, the caps should be taken off. Purée and whole fruit freezes well.
TOMATOES (There are more than 250 varieties commercially available.)	Midsummer in the West, late summer in the East	It is imperative to use tomatoes only when they are in season. Off-season tomatoes may look good, but flavor is watered down and the texture will be mealy. Heirloom tomatoes make for excellent savory sorbets and granités. To extract the most flavor from them, it is recommended to purée the fruit and then place it in a cheesecloth over a fine-mesh strainer for 24 hours in refrigeration to extract all the liquid. This is known as "tomato water." Some chefs employ salt to extract even more liquid from tomatoes, but this practice will be detrimental to sorbet and granité. Tomatoes ripen well on and off the vine at room temperature that does not exceed 27°C / 80°F. Refrigerating tomatoes is not recommended. Purée and juice freeze well. Whole fruit does not.
WATERMELONS	Summer	Even though it is part of the melon family, it has so many varieties and such a distinct flavor it deserves to be explained on its own. If held at room temperature for about a week after harvesting, flavor and color can improve, but then they should be stored between 10°C / 50°F and 16°C / 60°F, where they can last 2–3 weeks. Any lower and they lose color, any higher and they decay quickly. Once the fruit has been picked, its sugar content will not increase. Ethylene sensitive. The best clue to ripeness is the rind. It should be free of cracks or soft spots and neither very shiny nor very dull. The bottom should be yellowish in color, not greenish-white. If the stem is still attached, it should look dry and brown; if the stem is green, the melon was picked too soon. Fruit juice and whole fruit minus the rind freeze well.

Sorbet Mathematical Formulation

This chart explains the same mathematical formulation method found on page 77 in chapter 5, but in a more visual way. Each piece of information that relates to each other is shaded the same way.

STEP 1: Determine the desired yield in grams		100%	**5000**	
STEP 2: Determine the percentage of fruit to be used:				
Percentage in weight (in relation to the desired yield):		35%	1750	
STEP 3: Determine the desired percentage of solids (dry extracts):		31%	1550	
STEP 4: Add the following standard solids: (These amounts are solids that are part of the basic ingredients; they will be used to determine how much granulated sugar the recipe will need.)				
Fruit solids %: (input manually; see fruit chart on page 410 for the list of the most widely used fruits)		**10%**	**175**	**175**
Glucose powder (95% solids): (Glucose powder is 95% solids and 5% water; we are using 5% of the total weight of the recipe for glucose powder, therefore, 95% of 5% is 4.75%. This amount [237.5 g] is used to calculate these solids, but the whole amount, in this case 250 g, is needed to calculate the recipe accurately. This is why we have the column on the far right.)	5%	4.75%	237.5	**250**
Sorbet stabilizer (100% solids): (for this recipe we will use .35% of the total recipe as the stabilizer weight; stabilizers are 100% solids)	.35%	.35%	17.5	**17.5**
Weight of the above solids in grams: This is the addition of the 3 ingredients above. We will use the column on the far right (highlighted in gray-green) for the formula.		15.1%	430	442.5

Amount required to complete the desired percentage of solids (this will be the amount of sugar to add to the formula NOT THE RECIPE): 1550 (desired amount of solids) – 430 (standard recipe solids) = 1120 g; but since we have to use the highlighted column on the far right (because the whole weight of the powdered glucose has been factored into it), the actual amount of sugar we have to add is the following sum:

1550 (desired amount of solids)– 442.5 (standard recipe solids with the glucose powder water content factored in) = 1107.5

1120	g of sugar to add
	1107.5

STEP 5: Determine the required water amount:

All ingredients – desired yield = water		
1750 g fruit purée		
237.5 g powdered glucose		
17.5 g stabilizer		
1120 g granulated sugar		
1875 g water	1875	g of water to add
TOTAL WEIGHT:	5000	

FINISHED RECIPE

INGREDIENT	AMOUNT (IN GRAMS)	AMOUNT (IN POUNDS)	PERCENTAGE
Purée or juice: blood orange	1750	3.91	35%
Glucose powder: (remember that this amount is from the far right column because we are using the whole 5% of glucose powder; the 4.75% was to calculate the basic solids in the recipe in order to determine how much sugar to add)	250	.56	5%
Granulated sugar:	1107	2.47	22.15%
Stabilizer:	17.5	.04	.35%
Water:	1875	4.19	37.5%
TOTAL WEIGHT:	5000	11.16	100%

Procedure

1. Determine the formula for the sorbet.
2. Scale all of the ingredients accurately.
3. Combine all of the dry ingredients in a bowl.
4. Place the water in a pot over high heat and heat to 40°C / 104°F.
5. Once the liquid reaches 40°C / 104°F, pour in the dry ingredients carefully but quickly while whisking constantly.
6. Bring the mixture to 85°C / 185°F and maintain this temperature for 2 minutes (turn the heat off if necessary). This will allow the stabilizers to fully hydrate and all of the dry ingredients to dissolve. Do not exceed the heating time and/or temperature in order to prevent excess liquid evaporation, as that could alter the formula.
7. Chill the mixture to 4°C / 39°F.
8. Mix in the main ingredient.
9. Let the sorbet base mature for at least 2 hours and up to 6 hours.
10. Churn the sorbet base and transfer to a –10°C / 14°F freezer.
11. Let the sorbet harden for 2 to 4 hours before serving. Reserve for service.

Glossary

ACID: A substance having a sour or sharp flavor. Foods generally referred to as acids include citrus juice, vinegar, and wine. A substance's degree of acidity is measured on the pH scale; acids have a pH of less than 7.

AERATION: To incorporate air by beating or whipping ingredients.

AGAR-AGAR: A gelling substance derived from certain sea algae.

ALBUMIN: A water-soluble protein found in egg whites.

ALKALI: A substance that tests at higher than 7 on the pH scale. Baking soda is an example of an alkaline ingredient.

ALMOND PASTE: A mass of ground almonds and sugar.

BATCH FREEZER: A compact machine that churns frozen desserts and takes a product from room temperature to below freezing in a short amount of time.

BAUMÉ (BE): A scale for expressing the specific gravity of a liquid; or the method for measuring the density of sugar syrups. It is expressed in degrees.

BAUMÉ HYDROMETER: Used to measure density of sugar in a liquid; the Brix hydrometer (refractometer) is used to measure the percentage of sugar in a liquid.

BLANCH: To remove the skins from nuts and fruit with skin such as peaches, tomatoes, etc. by scalding.

BLAST FREEZER: A freezer that can drop down to −38°C / −37°F in a short period of time.

BLEND: To fold or mix ingredients together.

BLOOMING: The process of allowing gelatin to soften in (sheet gelatin) or soak up (granulated gelatin) cold water or other liquids.

BOMBE: Has the same components as a frozen parfait, but with 50 percent more heavy cream. The finished base is poured into a dome-shaped mold, which is how it got its name.

BRIX SCALE: A scale of measurement (decimal system) used to determine the density and concentration of sugar in a solution.

BUTTER: A semisolid fat made by churning cream, which contains between 80 and 90 percent milk fat and a maximum of 16 percent water.

CARAMELIZATION: The process of cooking sugar in the presence of heat. The temperature range in which sugar caramelizes is approximately 160 to 182°C / 320 to 360°F. The browning of sugar enhances the flavor and appearance of food.

CARBOXYMETHYL CELLULOSE: A stabilizer that gels with heat. It must be mixed into a cold liquid by stirring vigorously, and then allowed to rest under refrigeration so it can hydrate and reach 4°C / 40°F, where its gelling properties are activated. Helps to reduce ice crystal growth and will never give the product a gummy texture, which occurs with some stabilizers when used in excess.

COCOA BUTTER: The fat extracted from the cacao bean.

COMMON MERINGUE: A mixture of stiffly beaten egg whites and sugar. Also known as French meringue.

COUVERTURE: A type of chocolate specifically designed for coating or incorporation with other ingredients. Extra cocoa butter is added to increase its smoothness, flexibility, and gloss after tempering. The cocoa butter content of couverture should be at least 32 percent.

CRYSTALLIZATION: A process that occurs when sugar is deposited from a solution.

CUSTARD: Any liquid thickened by the coagulation of egg proteins. When referring to frozen custard, it is an ice cream that contains more egg yolks than traditional ice cream.

DEXTROSE: A simple sugar made by the hydrolysis of starch (water plus an acid); also known as corn syrup. It comes from glucose, which is categorized according to its Dextrose Equivalent (DE).

DEXTROSE EQUIVALENT: A percentage that indicates how much of the starches have been broken down into sugar.

DIGLYCERIDE: A diglyceride is a glyceride consisting of two fatty acid chains covalently bonded to a glycerol molecule through ester linkages.

DISACCHARIDE: A complex or double sugar. When fructose and dextrose are bonded together, this is called sucrose, or table sugar. Maltose is another example of a disaccharide.

DISSOLVING: The process of heating bloomed gelatin until it is transparent and liquid; also known as melting.

EMULSIFIER: A type of food additive used to help bind two unmixable liquids into a uniform distribution.

EMULSION: The suspension of two ingredients that do not usually mix. Butter is an emulsion of water in fat.

FOAMING: The process of beating eggs (the yolks and/or whites) or heavy cream to incorporate air until they form a foam.

FORMULA: A recipe in which measurements for each ingredient are given as percentages of the weight for the main ingredient.

FRAPPÉ: A combination of a fruit sorbet and a liquid or dairy product that is mixed in a blender until it obtains a slush-like consistency.

FRUCTOSE: A monosaccharide that occurs naturally in fruits and honey; also known as fruit sugar or levulose.

GANACHE: An emulsion of chocolate and cream. Ganache may also be made with butter or other liquids in place of the cream.

GELATIN: A protein derived from the skins and tendons of animals. Gelatin is used as a binder and stabilizer. It is available in granulated and sheet/leaf forms.

GELATINIZATION: The process in which starch granules, suspended in liquid, are heated; they begin to absorb liquid and swell in size.

GELATO: An Italian-style ice cream that is denser than American-style ice cream. It has an overrun of 20 percent.

GELLAN GUM: A stabilizer that is obtained from fermented bacteria. Gellan gum is characterized by high gel strength, ease of use, clarity, flexibility, reliable supply, and ability to be used in a variety of combinations.

GLUCOSE: (1) A monosaccharide that occurs naturally in fruits, some vegetables, and honey; also known as dextrose. (2) A food additive used in confections. (3) Glucose syrup is obtained from starch, most commonly cornstarch. Glucose syrup is categorized according to its Dextrose Equivalent (DE). The DE stands for how much of the starches have been broken down into sugar.

GLUCOSE POWDER: Glucose powder or atomized glucose is glucose syrup that has had 95 percent of its water content removed. There is still 5 percent moisture in it. Dextrose powder is 8 percent water.

GRANITÉ (OR GRANITA): A frozen mixture made with water, sugar, and a flavoring such as fruit juice or wine; stirred frequently while freezing, it has an icy texture.

GUAR GUM: A stabilizer often used in combination with locust bean gum and carrageenan, because if used alone it is not as quick to react to changes in the environment (heat shock).

GUM ARABIC: A water-soluble vegetable gum obtained from the stems and branches of various species of acacia trees. It is used to thicken, emulsify, and stabilize foods such as candy and ice cream.

HEAVY CREAM: A milk product composed of water and fat molecules that are protected by a membrane composed of phospholipids that are evenly dispersed in water. It usually contains between 32 and 40 percent milk fat.

HOMOGENIZE: To take ingredients and mix them together so they become the same in structure.

HYDRATE: To combine ingredients with water or to add water to dry ingredients.

ICE CREAM: An ice cream is an emulsion and then, after churning, is a foam in which the air bubbles are stabilized by freezing a large amount of the liquid around them. Can be made with or without eggs.

ICE CREAM CONE: A wafer rolled into a cone used to hold ice cream for eating; sometimes dipped in chocolate or other syrup and coated with nuts or the like.

INFUSE: To flavor by allowing an aromatic to steep in the liquid to be flavored. Infusions may be made either hot or cold.

INVERT SUGAR (ALSO KNOWN AS TRIMOLINE): Sucrose that has been broken down (inverted) into dextrose (glucose) and levulose (fructose). It is sweeter and more soluble than sucrose and does not crystallize as easily.

ITALIAN MERINGUE: A meringue made from whipped egg whites and sugar syrup that has been cooked to 121°C / 250°F. The syrup is poured slowly into the whipping egg whites when they have achieved stiff peak, and then the meringue is whipped to the desired peak.

LACTIC ACID: An acid produced when lactose is fermented. It occurs naturally when milk is soured.

LACTOSE: The simple sugar found in milk.

LOCUST BEAN GUM: A stabilizer that is not used so much for its gelling properties, but rather for its capacity to enhance aeration and for protecting the frozen product from frequent heat shock by insulating ice crystals.

MERINGUE: A mixture of stiffly beaten egg whites and sugar; depending on the ratio of sugar to egg whites, a meringue may be soft or hard. See French, Swiss, and Italian meringue.

MISE EN PLACE: French for "put in place." The preparation and assembly of ingredients, pans, utensils, and plates or serving pieces needed for a particular dish or service period.

MONOGLYCERIDE: A glyceride consisting of one fatty acid chain covalently bonded to a glycerol molecule through an ester linkage.

MONOSACCHARIDE: A single or simple sugar and the basic building block of sugars and starches. Fructose, glucose, levulose, and dextrose are examples of monosaccharides.

MOUSSE: A French term that means "foam" or "froth;" also a soft, creamy food, either sweet or savory, lightened by adding whipped cream, beaten egg whites, or both, or a *pâte à bombe*.

NAPPE: The consistency of a liquid that will coat or cover the back of a spoon. In English it means "to coat."

OVERRUN: The increase in volume of ice cream, sorbet, sherbet, or gelato caused by the incorporation of air during the freezing process.

PACOJET: A machine that does not churn but shaves frozen products to a very smooth consistency without the need for a stabilizer or emulsifier.

PACOTIZE: The act of shaving an item such as ice cream in a Pacojet.

PARFAIT: Composed of a cooked egg yolk foam (*pâte à bombe*), cooled to room temperature, or an Italian meringue), a whipped heavy cream foam (which will be the dominant foam), sugar, and a flavor base, usually a fruit purée or chocolate that is melted but cool.

PASTEURIZATION: The process of heating milk to a high temperature (usually 72°C / 161°F) for approximately 15 seconds to kill pathogenic bacteria and destroy enzymes that cause spoilage, thus increasing shelf life.

PATHOGEN: A disease-causing microorganism.

PECTIN: A gelling agent or thickener found in fruits, particularly in apples, quince, and the skins of citrus fruits.

PH SCALE: A scale with values from 0 to 14 representing degrees of acidity. A measurement of 7 is neutral, 0 is most acidic, and 14 is most alkaline. Chemically, pH measures the concentration and activity of the element hydrogen.

POPSICLE: The trademarked name for a colored, flavored ice confection with one or two sticks for a handle.

POWDERED MILK: A common source of nonfat milk solids. Contains less than 1 percent fat. Equally composed of lactose and proteins (specifically, whey proteins and, to a lesser amount, casein), and minerals (calcium and phosphorus). Although dry in appearance, it contains 4 percent water.

REFRACTOMETRIC INDEX (RI): A measure of a fruit's sugar content. A refractometer, also called a Brix hydrometer, is used to determine the precise sugar content in bases of frozen desserts.

RETROGRADATION: The process in which starches high in amylose revert back to their insoluble form after they are gelatinized and then undergo freezing, refrigeration, or ageing. This reaction causes changes in texture and appearance.

SACCHARIDE: A sugar molecule.

SEMIFREDDO: An Italian word for "semi-cold" or "half-cold." It is a partially frozen dessert that is made from all three foams (pâte à bombe, egg whites (French meringue), and whipped heavy cream) plus the addition of flavor, typically added in a liquid form, which makes it incredibly light.

SHERBET: An ice containing dairy in smaller amounts than another liquid, which can be water, fruit purée, or fruit juice, or a combination of these three items.

SODIUM ALGINATE: Extracted from sea algae, it is considered a highly effective stabilizer because of the texture and body it adds to ice creams and sherbets, and because it can bind calcium better than other stabilizers.

SORBET: A sorbet is an aerated non-dairy frozen product that is churned in a batch freezer or Pacojet. Sorbets are made mainly of a fruit or vegetable juice, a fruit or vegetable purée, an infused or flavored liquid, a wine, or a liqueur.

SOUFFLÉ: A sweet or savory French dish made with a custard base lightened with whipped egg whites and then baked. A frozen soufflé is not baked but contains egg whites to create a meringue. The word *soufflé* is the past participle of the French verb *souffler,* which means "to blow up" or, more loosely, "to puff up."

STABILIZER: An ingredient that helps to develop the solid structure or "framework" of a finished product. Gelatin and pectin can act as stabilizers in ice cream bases.

SUCROSE: A disaccharide extracted from sugarcane or sugar beets and consisting of glucose and fructose joined together in the molecule.

SWISS MERINGUE: A cooked French meringue in which egg whites and sugar are cooked to 60°C / 140°F over a water bath and then whipped to the desired peak.

UNSWEETENED CHOCOLATE: Chocolate liquor without added sugar or flavorings.

WHITE COUVERTURE: True white couverture, like that found in Europe, is made from cocoa butter, milk, sugar, and flavorings; it contains no chocolate liquor. In the United States, white confectionery coating, made with vegetable fat instead of cocoa butter, is more readily available.

XANTHAN GUM: A stabilizer that has great thickening power (it can thicken alcohol). It is hot- and cold-soluble, almost immediately as it comes into contact with a liquid.

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http://www.taylor-company.com/

http://www2.carpigiani.com/eng/index.asp

http://www.emerythompson.com/

BAUMÉ AND BRIX INFORMATION

http://www.monashscientific.com.au/Baume.htm

CONVERSION TOOLS

http://www.onlineconversion.com/

http://www.epicurean.com/calc/

DAIRY CHEMISTRY AND PHYSICS

http://www.foodsci.uoguelph.ca/dairyedu/chem.html#protein2

THE EGG'S PH AND COMPOSITION

http://food.oregonstate.edu/learn/ph.html

http://food.oregonstate.edu/learn/egg.html

FRUIT/VEGETABLE AND PRODUCE FACTS AND INFORMATION

http://www.crfg.org/pubs/frtfacts.html

http://www.noursefarms.com/Default.aspx?aspxerrorpath=/Defaul.aspx

HISTORY

http://www.historicfood.com/Ice%20Cream%20Cone.htm

http://www.procope.com/fr/menu.htm

http://www.foodtimeline.org/

INDUSTRIAL PRODUCTION OF ICE CREAM

http://www.foodsci.uoguelph.ca/dairyedu/icecream.html

INGREDIENT INFORMATION

http://www.omafra.gov.on.ca/english/food/industry/food_proc_guide_html/chapter_4.htm

MEASURING INSTRUMENTS

http://www.widdernet.de/instruments.html

PACOJETS

http://www.pacojet.com

REFRACTOMETERS

http://www.atago.net/

SANITATION GUIDELINES

http://www.hi-tm.com/PDG/Retail-VII.html

SUGAR

http://www.realbakingwithrose.com/2005/12/sugar.html

USDA FOOD COMPOSITION WEB SITE

(used to calculate solids, water, and sugar percentages of most foods); used extensively for formulation

http://www.nal.usda.gov/fnic/foodcomp/search/

Resources

FRUIT PURÉES

www.perfectpuree.com

SPECIALTY PRODUCE

(unusual fruits and vegetables)

www.specialtyproduce.com

SPECIAL INGREDIENTS

(ice cream stabilizer, sorbet stabilizer, powdered dextrose, powdered glucose, trimoline, gelling agents, emulsifiers)

www.pastrychef.com

www.chefrubber.com

www.lepicerie.com

SPICES AND VANILLA

(pods and other derivatives)

Aaron Isaacson (a.k.a. Mr. Recipe)
(646) 261-4460
mrrecipe@gmail.com

TOOLS AND EQUIPMENT

www.jbprince.com

www.pastrychef.com

www.chefrubber.com

HUDSON VALLEY PRODUCE

(Most of the fruits and vegetables used in this book were sourced from the following farms.)

GREEN HORIZONS FARM
Bob Davidson
P.O. Box 141
6 South Dingle Road
Pawling, NY 12564
(845) 855-5555

MEADOW VIEW FARM
Bart and Doris Colucci
105 Phillies Bridge Road
New Paltz, NY 12561
(845) 255-6093

OLD SAWMILL FARM
Chuck and Kay Abraham
140 Old Sawmill Road
Germantown, NY 12526
(378) 929-5229

SORBELLO FARMS
Frank and Ann Sorbello
112 Martin Road
Highland, NY 12528
(845) 691-7828

TALIAFERRO FARMS
Pete and Robin Taliaferro
187 Plains Road
New Paltz, NY 12561
(845) 542-3379
www.taliaferrofarms.com

WIGSTEN FARM
Paul and Robin Wigsten
60 Wigsten Road
Pleasant Valley, NY 12569
(845) 235-7469
www.wigstenfarm.com

WONDERLAND FARM
Steve and Patty Lobotsky
191 White Schoolhouse Road
Rhinebeck, NY 12572
(845) 876-6760

DAIRY PRODUCTS

All the milk, heavy cream, crème fraîche, and butter used in this book were from Ronnybrook Farm, in Ancramdale, New York (Hudson Valley).

http://www.ronnybrook.com

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